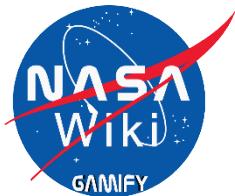


NASA EVA Gamification

MEDIAWIKI INSTALL (CENTOS 7)

PHASE II



Prepared By

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Version Number	Description of Change	Author	Date
1.0	Initial Creation of Document	Kevin Fortier	04/07/2018
1.1	Formatting corrections	Michael Salgo	04/10/2018
1.2	Added additional networking options and steps to install the NASA_EVA_Gamification extension	Kevin Fortier	04/14/2018
1.3	Added additional steps for NAT install	Michael Salgo	04/17/2018
2.0	Review Installation and updated with DVD ISO instructions	Laura Addiego Prospero	08/06/2018

Introduction

Document Overview

This document will detail the steps needed to get a MediaWiki environment up and running on a CentOS 7 operating system. This document will also provide guidance on installing Oracle's VirtualBox software on a Windows host system, so the CentOS 7 install can run as virtual machine. It is assumed the reader is minimally familiar with networking basics, Windows and Linux administration, and has the required permissions on their Windows host for software installation.

All screen captures are taken on a Windows 10 host machine, installing VirtualBox 5.2.8, for a CentOS 7 Build 1708 image. Future versions of the software above, may differ slightly in their presentation.

Obtaining the CentOS 7 image

The following instructions use DVD ISO which can be downloaded from

<https://www.centos.org/download/>. It is advised to verify the download via checksum before using the image.



Virtual Box

Software Installation

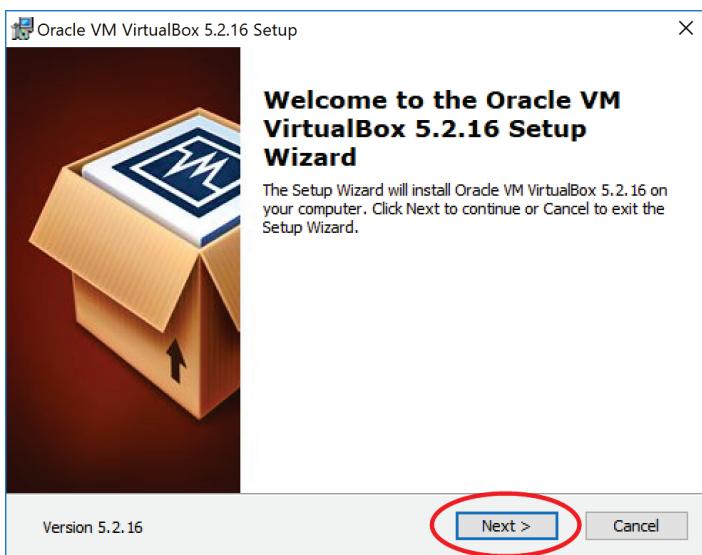
This section can be skipped, if there is a host system which can directly take the CentOS 7 install. Otherwise, the VirtualBox software can be used to create a virtualized system which can run inside of a Windows host.

These steps are provided as guidance only. If problems arise during the install or alternative options are picked during install, please visit <https://www.virtualbox.org/> for additional reference.

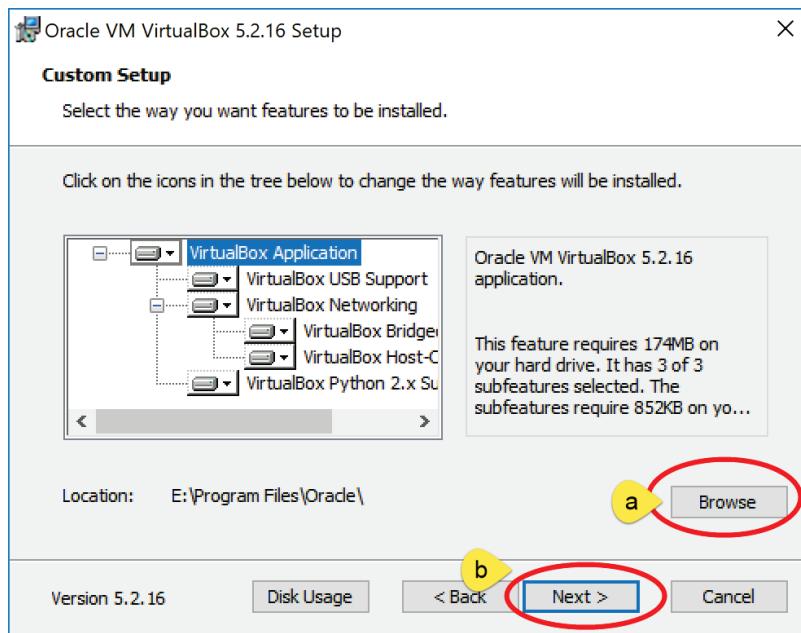
1. Obtain Oracle VirtualBox software from <https://www.virtualbox.org/wiki/Downloads>. The guide will use the Windows hosts installation package.

The screenshot shows the 'VirtualBox binaries' page. On the left, there's a sidebar with links like 'About', 'Screenshots', 'Downloads', 'Documentation', 'End-user docs', 'Technical docs', 'Contribute', and 'Community'. The main content area has a large 'VirtualBox' logo and a 'Download VirtualBox' button. Below it, a section titled 'VirtualBox binaries' contains text about the license and links for 'VirtualBox 5.2.16 platform packages'. A bulleted list includes 'Windows hosts' (which is circled in red), 'OS X hosts', 'Linux distributions', and 'Solaris hosts'. At the bottom, it says 'The binaries are released under the terms of the GPL version 2.'

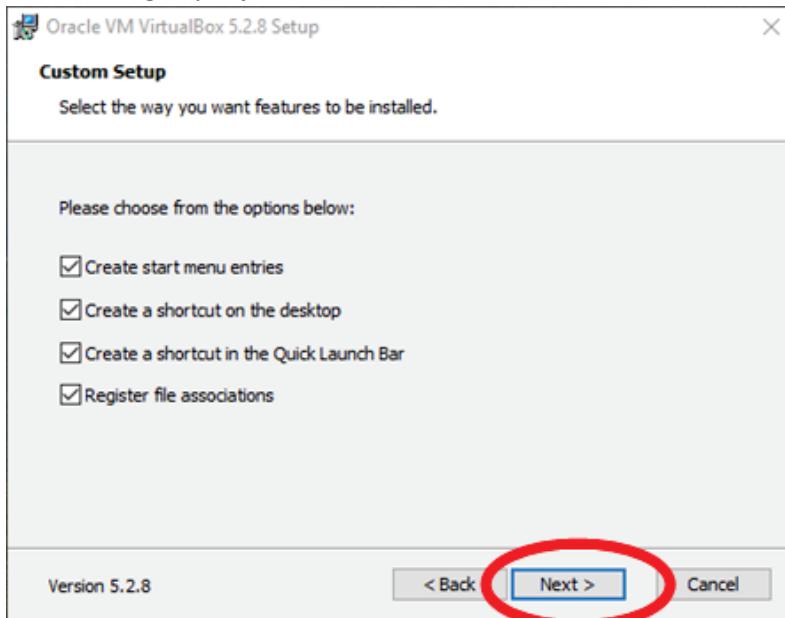
2. Run the downloaded installation package. If the user on the Windows host has non-elevated privileges, the installation package should be run as an Administrator.
Click the Next > button on the initial Setup Wizard screen.



- 3 Custom Setup. Leave the features to be installed as the default.
- Click the Browse button to select a different install location if desired.
 - Click the Next > button when satisfied with the selections.



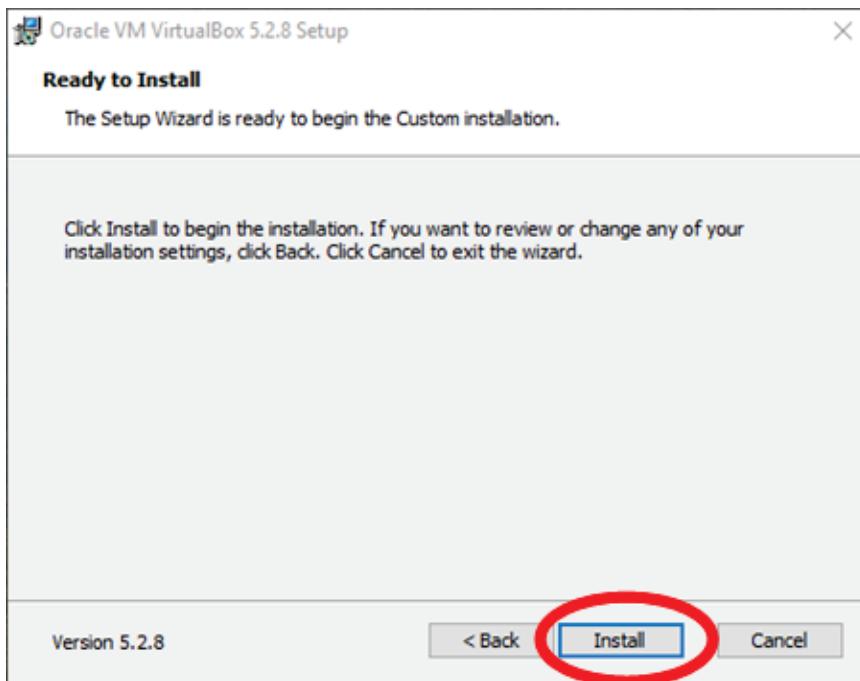
4. Select which options to additionally install, based on personal preference. It is advised to keep the “Register file associations” and “Create start menu entries” checked. Click the Next > button after making any adjustments.



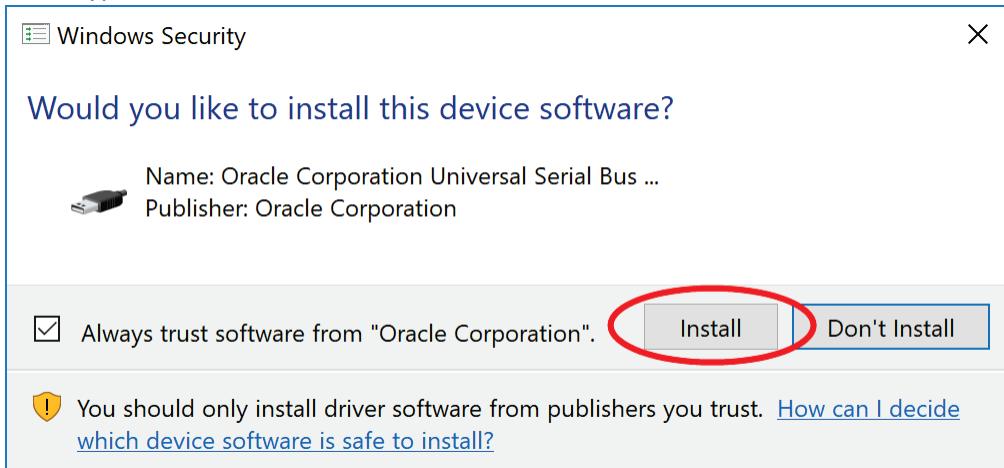
5. The software will add features related to any networking interfaces on the host machine. As a result, network connectivity may be impacted during the install. Click Yes to proceed.



6. Click the Install button to start the install.



7. Windows Security messages may appear after starting the install. Click Yes on any messages of these type to allow the installation to continue.



8. After some time, the installation will finish. Click the Finish button, which will launch the software.



Extension Pack Install (Optional)

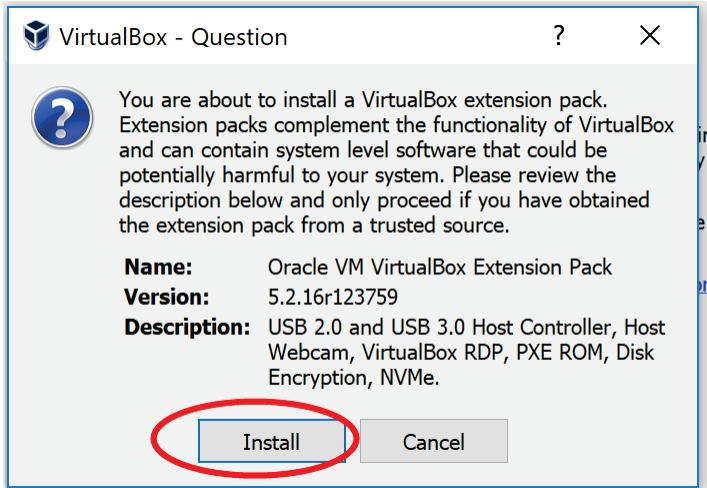
While not needed for the VirtualBox software to work, it is highly advised to install the Extension Pack. It contains support for USB 2.0 and USB 3.0 devices, disk encryption, and other features which provide a better user experience, in terms of use and administration. The steps below will guide through the process of installing the Extension Pack.

1. Close the VirtualBox software, if started from the install process.
2. Go to the VirtualBox website and navigate to the Downloads page:
<https://www.virtualbox.org/wiki/Downloads>.
3. Click on the “All supported platforms” link under the Extension Pack section to begin the software download. The file should end with “.vbox-extpack”.

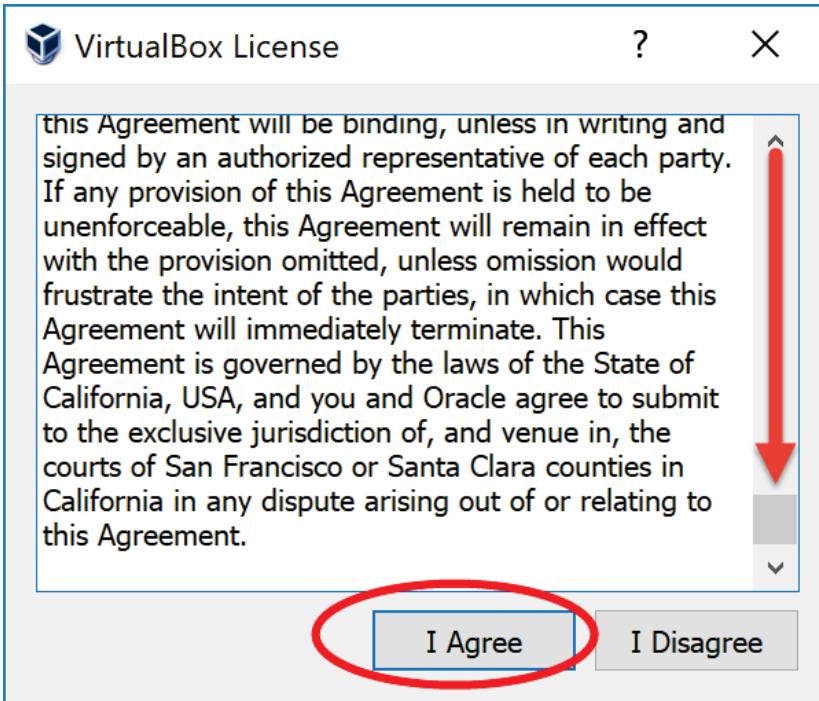


The screenshot shows the "Download VirtualBox" page. On the left, there's a sidebar with links: About, Screenshots, Downloads, Documentation, End-user docs, Technical docs, Contribute, and Community. The main content area has a large "VirtualBox" logo at the top. Below it, a section titled "Download VirtualBox" contains text about finding binaries and source code. Under "VirtualBox binaries", it says "By downloading, you agree to the terms and conditions of the respective license." and "If you're looking for the latest VirtualBox 5.1 packages, see [VirtualBox 5.1 builds](#). Consider upgrading." A section for "VirtualBox 5.2.16 platform packages" lists links for Windows hosts, OS X hosts, Linux distributions, and Solaris hosts. Below this, it says "The binaries are released under the terms of the GPL version 2." and "See the [changelog](#) for what has changed." It also mentions SHA256 and MD5 checksums and a note about upgrading guest additions. At the bottom, there's a section for "VirtualBox 5.2.16 Oracle VM VirtualBox Extension Pack" with a link to "All supported platforms", which is circled in red. The text below it describes support for various features like USB 2.0/3.0, RDP, disk encryption, NVMe, and PXE boot.

4. Click the Install button to proceed with the installation.

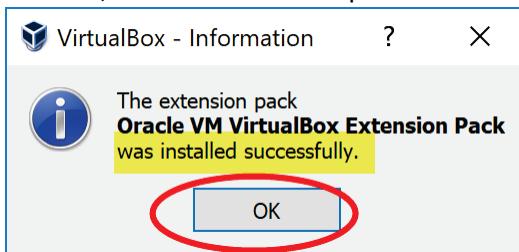


5. Scroll to the bottom of the text box and click the I Agree button on the License window.



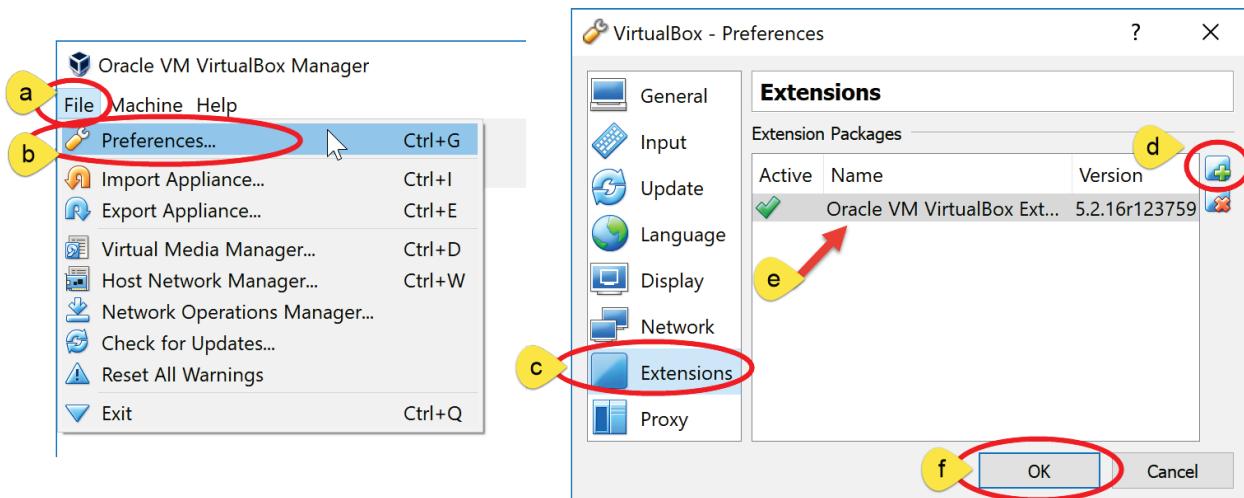
6. If any Windows UAC prompts appear, click Yes to install the software.

7. Click OK, after the extension pack has finished installing.



8. After the extension installation completes, double-check that it has been successfully installed.

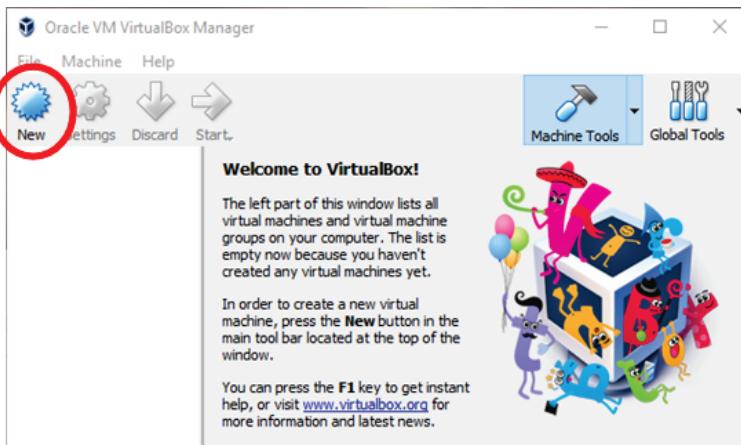
Navigate to File > Preferences > Extensions; you should see the extension with a green checkmark next to it. Click OK.



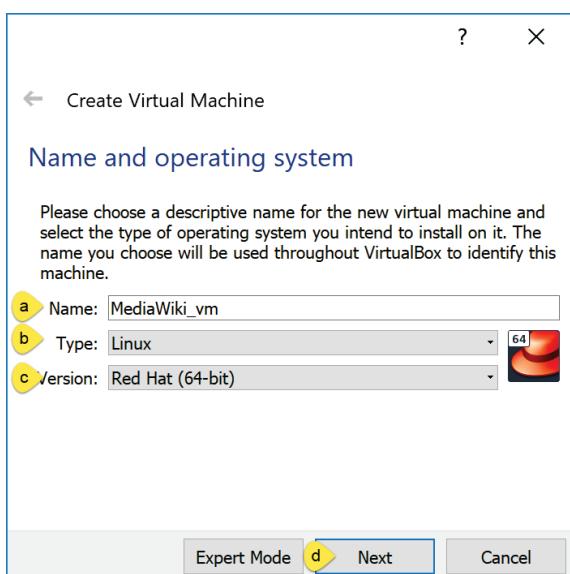
Creating a Virtual machine

The following steps will detail how to create the CentOS 7 Virtual Machine (VM). The screen captures included below are from VirtualBox software which has the Extension Pack installed. If the Extension Pack was not installed, some options may not be available.

1. Start the VirtualBox software if not already running. Insure that the software is in Machine Tools view.
2. Click on the “New” button.



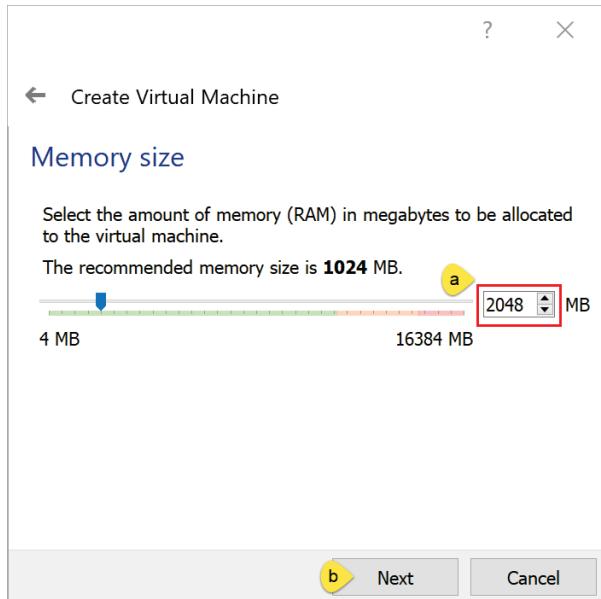
3. Name and operating system
 - a. Give the virtual machine a name
 - b. Select “Linux” for Type
 - c. Select “Red Hat (64-bit)”. Since there is no CentOS as a choice, Red Hat is the most similar to CentOS and it will give you the same environment, so we are going to use this version.
 - d. Click the Next button when done.



NOTE: If when selecting the Version, you only see “32-bit” options, and you are sure your host machine is 64-bit, this means your virtualization technology in the BIOS is not enabled. See “[Appendix A – Enabling Virtualization](#)” at the end of this document.

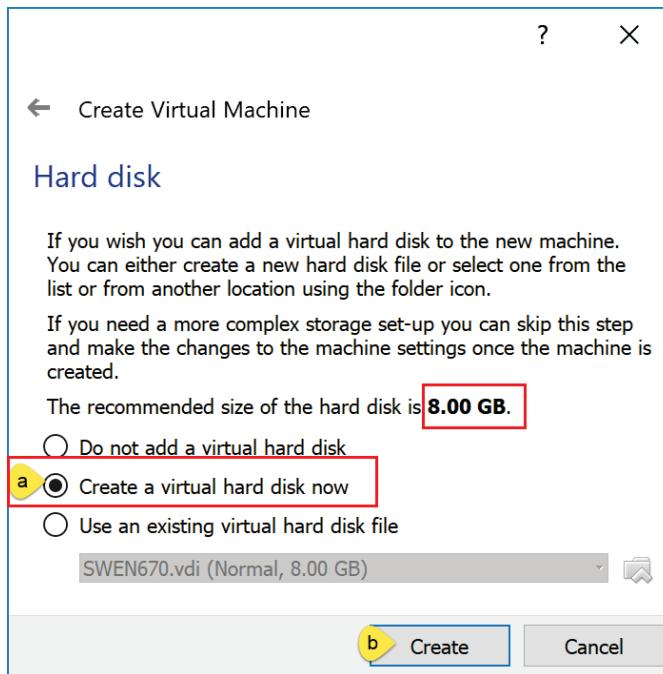
4. Memory size

- a. Adjust the memory size to give to the VM. This setting will be highly dependent on the total memory of the host system. A value of 2018 MB is recommended if the host machine has at least 8GB of RAM or higher.
- b. Click Next after adjusting the value.



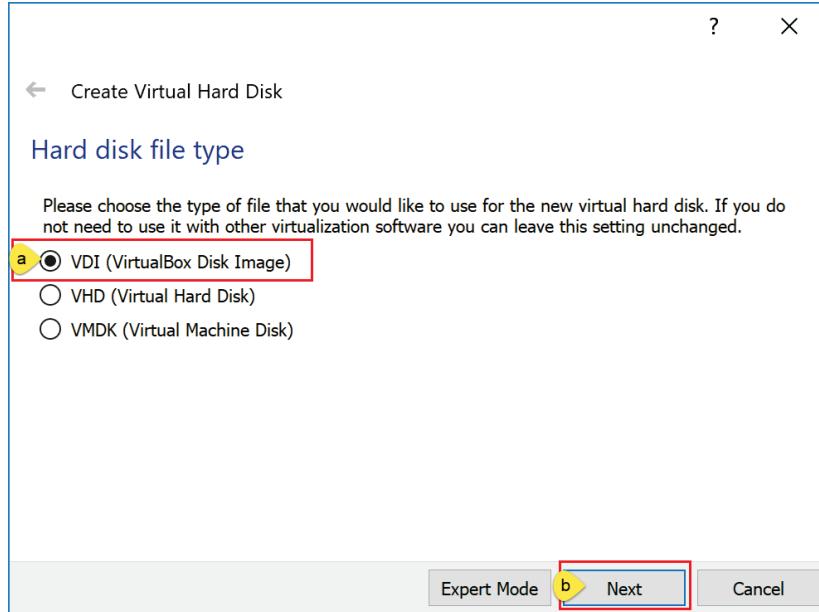
5. Hard disk

- a. The recommended size of 8.00GB is sufficient. The value can be increased if desired. Make sure the "Create a virtual hard disk now" option is selected
- b. Click the Create button.



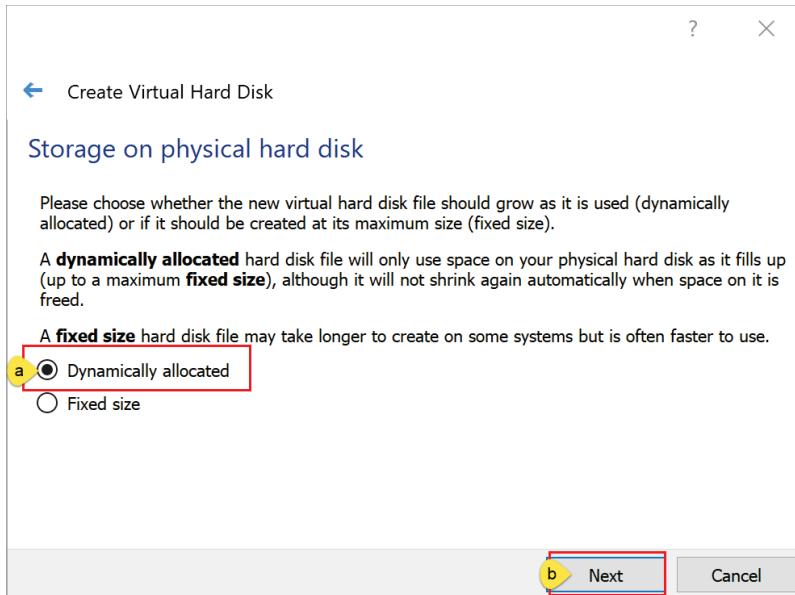
6. Hard disk file type

- a. The default VDI disk file type can be selected. Other options can be used if more familiar with different virtual machine software.
- b. Click Next to continue.



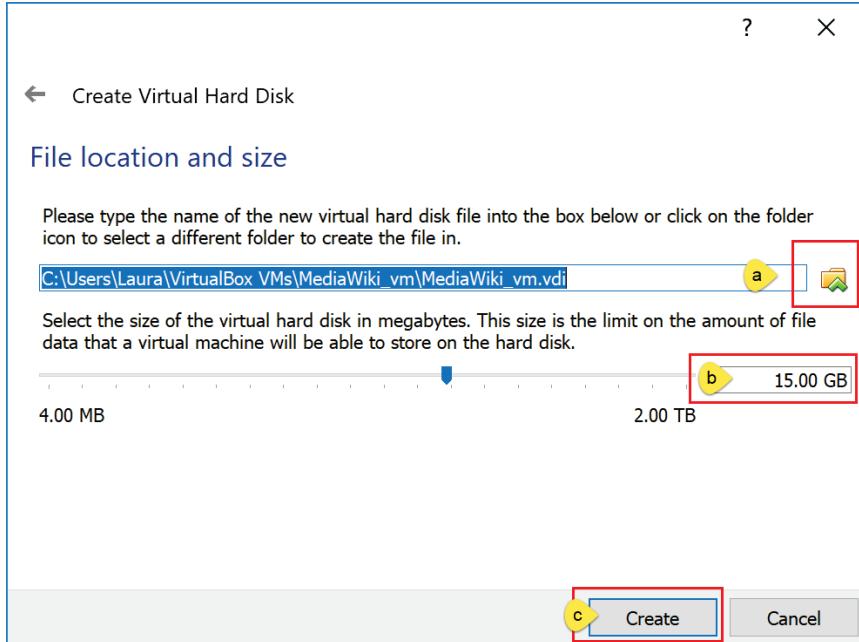
7. Storage on physical hard disk.

- a. It is recommended to use the “Dynamically allocated” option. This will keep the footprint of the VM as small as possible.
- b. Click Next to continue.

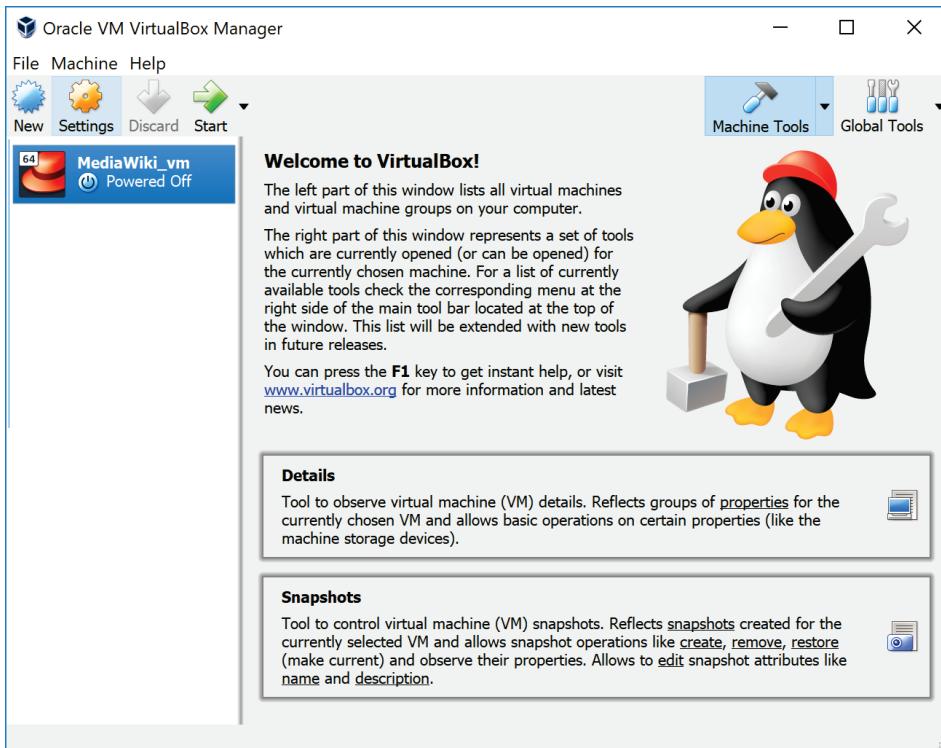


8. File location and size.

- Select the folder icon if you would like to give the virtual hard disk a different location.
- The disk size and location can be adjusted here, if the defaults are not desired.
- Click the “Create” button to continue.



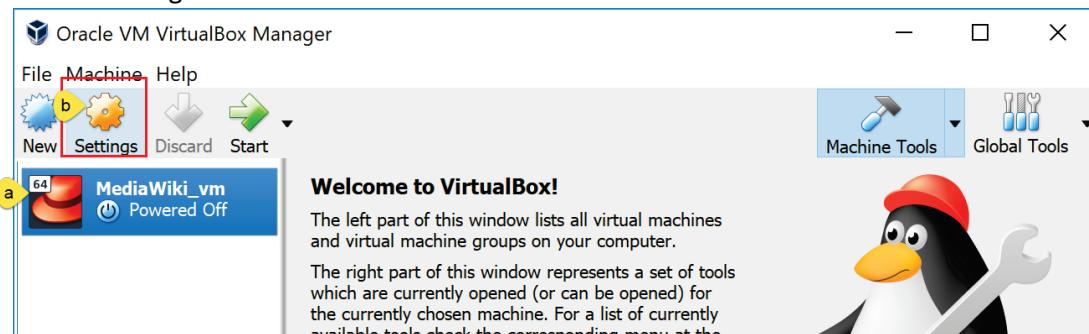
9. The VM should be created and Powered Off in the Machine Tools view.



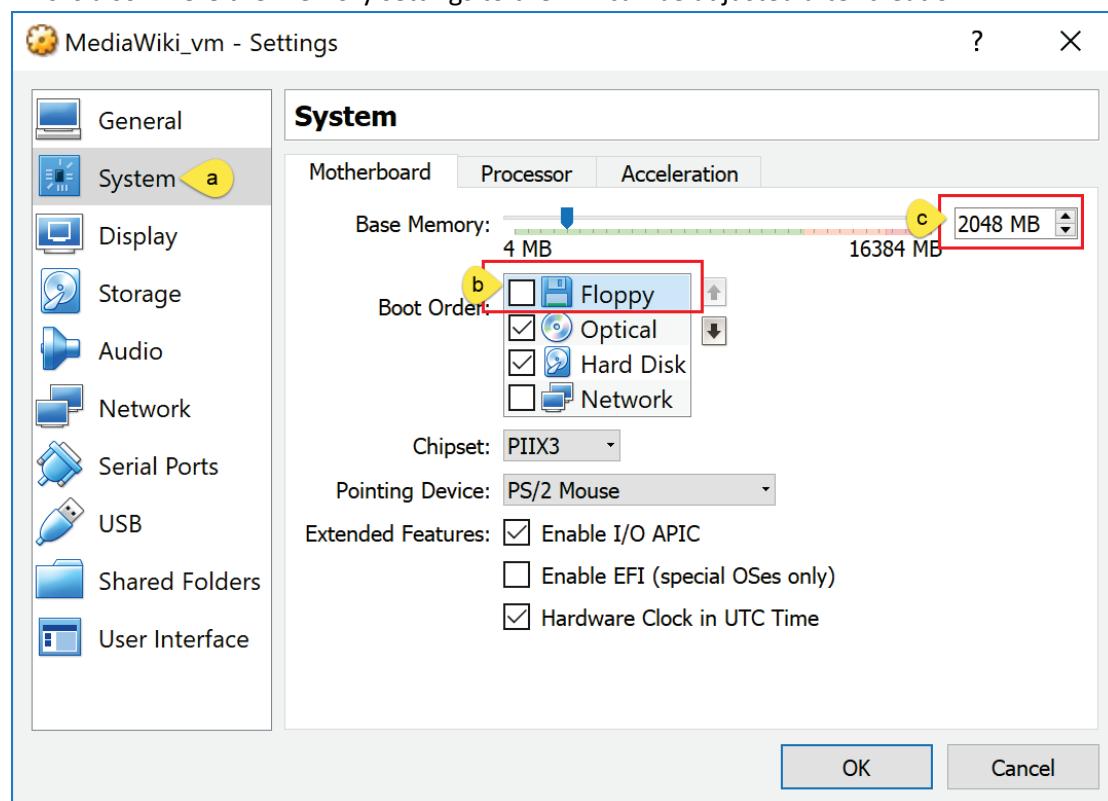
Machine setting adjustments

After the creation of the VM, and before we power up the machine, a few settings needs to be changed for better performance and usability.

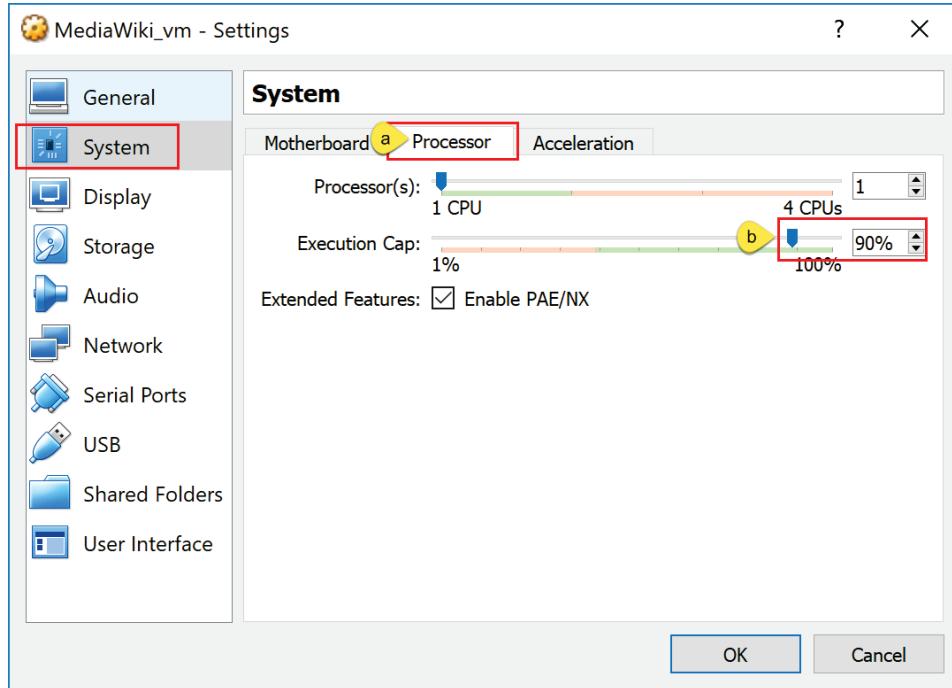
1. Accessing the settings.
 - a. Highlight the VM created in the previous steps
 - b. Click the Settings button.



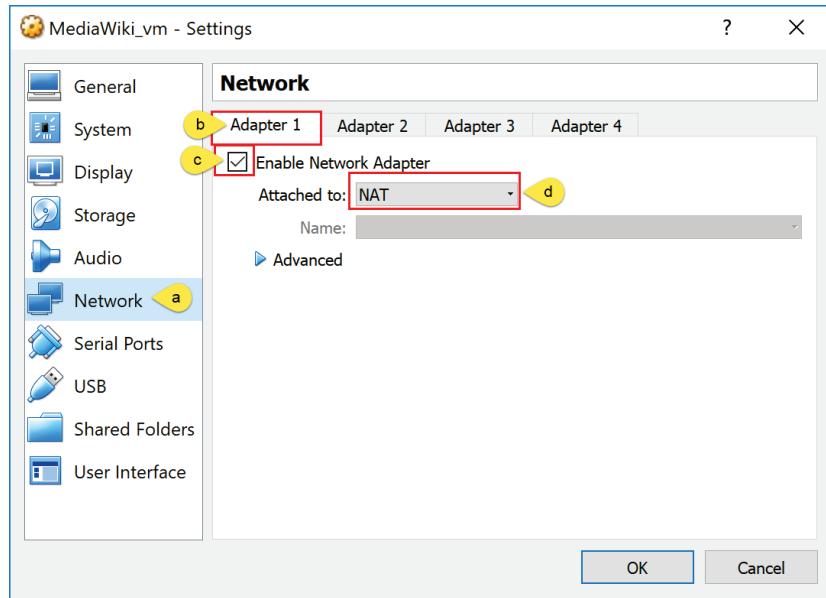
2. System > Motherboard tab
 - a. Under the System/Motherboard menu,
 - b. The Floppy option can be unchecked.
 - c. This is also where the memory settings to the VM can be adjusted after creation.



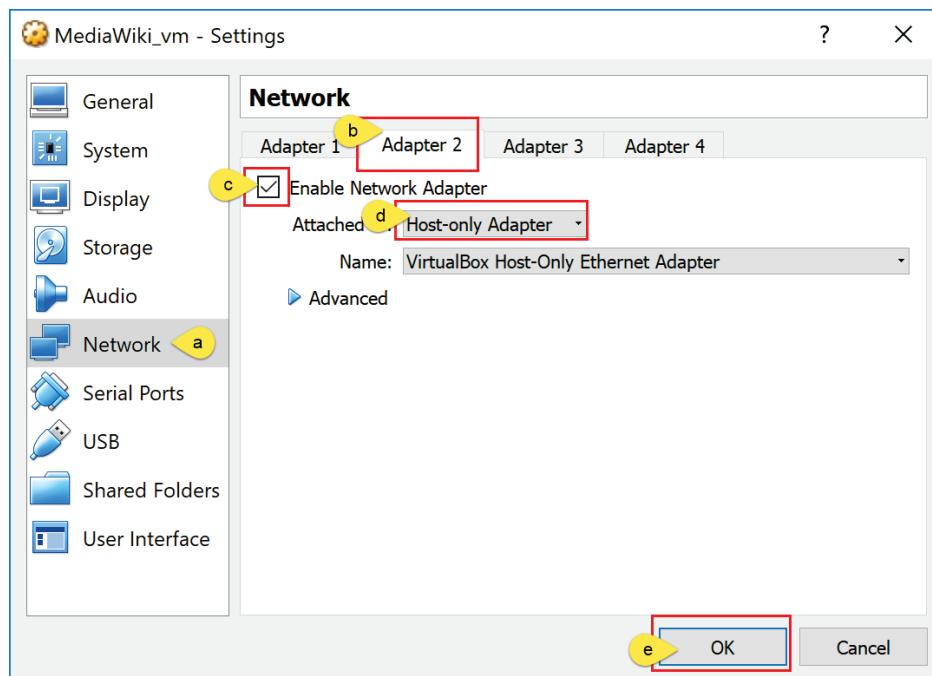
3. System > Processor tab,
- Click on the “Processor” tab.
 - The Execution Cap should be adjusted to 90%. This will prevent the VM from completely consuming CPU resources on the host machine, if it is CPU bound for an extended period. If the host machine’s BIOS supports it, the Enable PAE/NX should remain checked.



4. Network / Adapter 1 tab,
- Click on “Network”
 - Make sure you are on the “Adapter 1” tab.
 - Ensure the “Enable Network Adapter” is checked.
 - The selection of “Attached to” is best left to the individual configuration of the host machine and how it connects to a network. Greater detail and images can be found at <https://blogs.oracle.com/scoter/networking-in-virtualbox-v2>. A quick summary of options to consider, which allow for Internet connectivity, are:
- NAT:** The host machine will assign the VM an IP address of 10.0.2.15. All network traffic will depend on the host for communication, but this allows the host machine to move between networks (wired vs. wireless) without interruption to the VM.
- If using NAT:
- click on the “Adapter 2” tab
 - Check “Enable Network Adapter” checkbox.
 - For “Attached to:” set it to “Host-only Adapter.”
- This will be used to SSH/interact with the VM from the host machine.
- Bridged Adapter:** This will place the VM directory on the network. It will be dependent on the host’s network interface for a connection but will otherwise present on the network like an independent machine. This option is ideal for wired-only hosts.
- In this guide we will be using NAT .



5. Network / Adapter 2 tab,
- Click on “Network”
 - Make sure you are on the “Adapter 2” tab.
 - Ensure the “Enable Network Adapter” is checked.
 - The selection of “Attached to” select “Host-only Adapter”

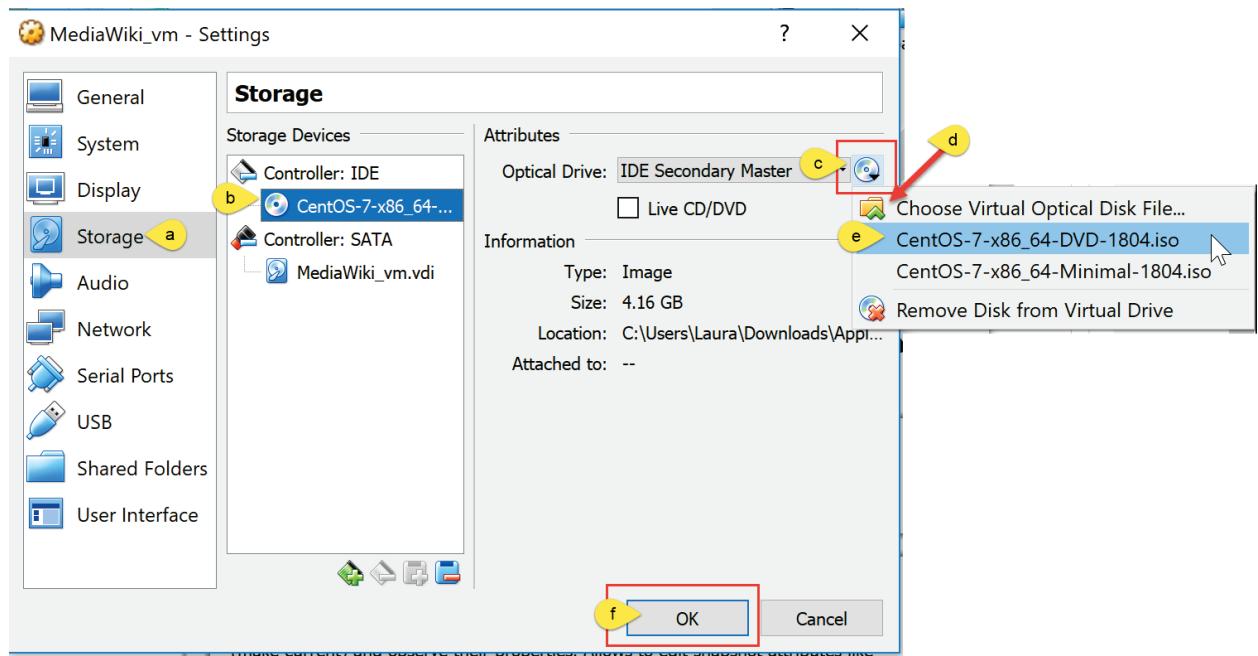


Other options can be selected, based on the needs of the host admin. The above settings are just recommendations for a VM which can support the CentOS 7 install for the SWEN670 course. Click the OK button when finished.

Installing CentOS 7

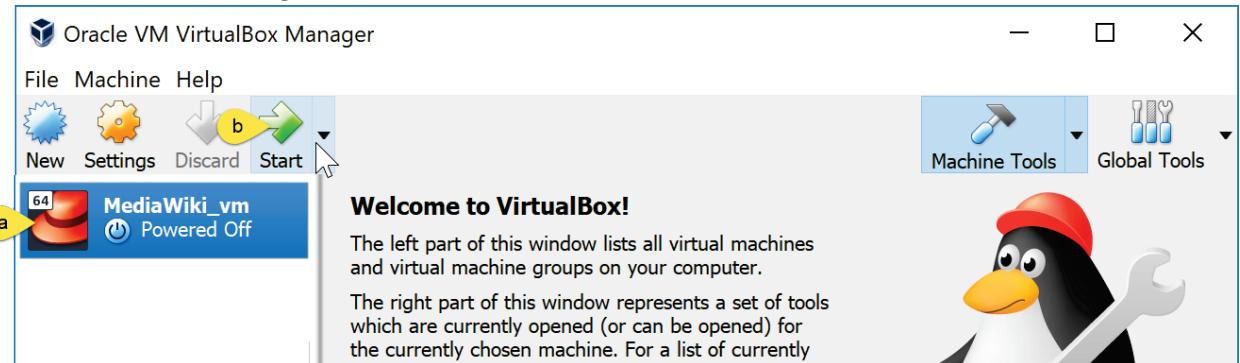
The ISO image downloaded previously from <https://www.centos.org/download/> should be mounted to a removable medium. The steps below are designed to install to the previously created VirtualBox VM.

1. Highlight the VM and click the Settings button.
 - a. Navigate to the Storage menu and
 - b. Select the empty CD -ROM
 - c. click on the CD ROM icon to highlight the IDE Secondary Master setting.
 - d. select the “Choose Virtual Optical Disk File”.
 - e. Find and select the downloaded ISO file and click Open to return to the previous window.
 - f. Click OK to return to the VirtualBox Manager window.

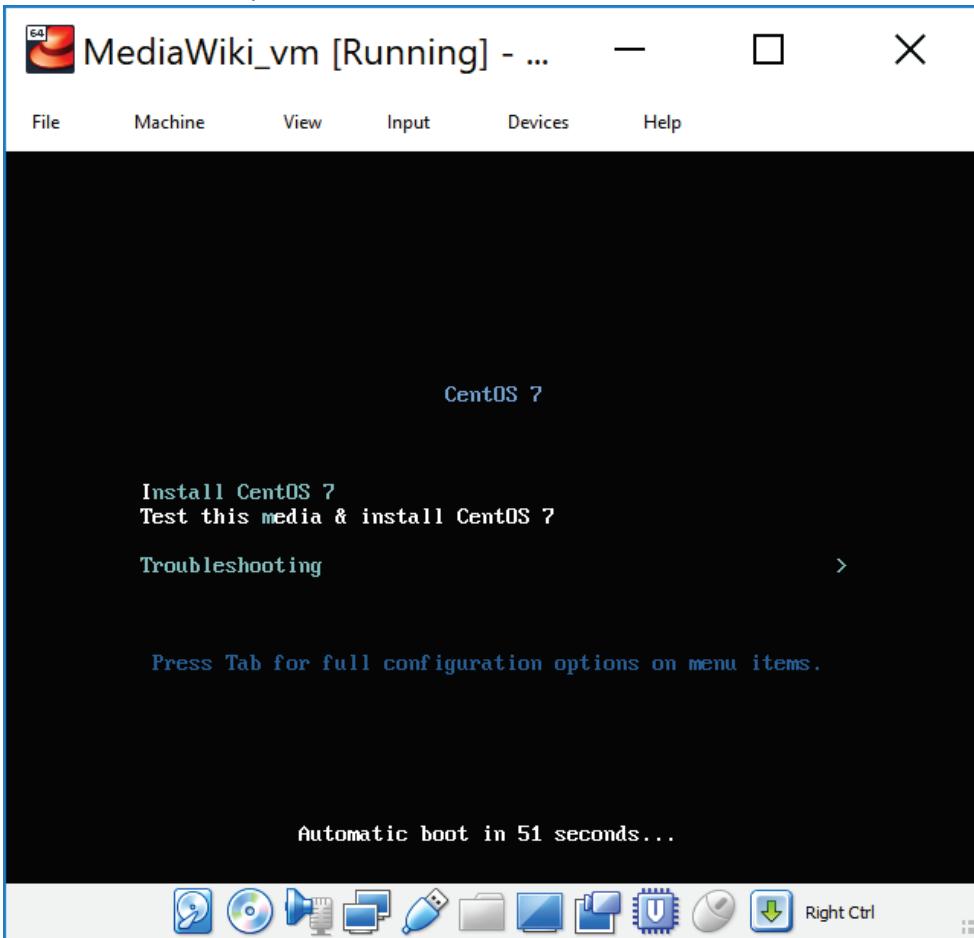


Starting the Virtual machine

1. On the VirtualBox Manager, select the virtual machine and click on “Start”

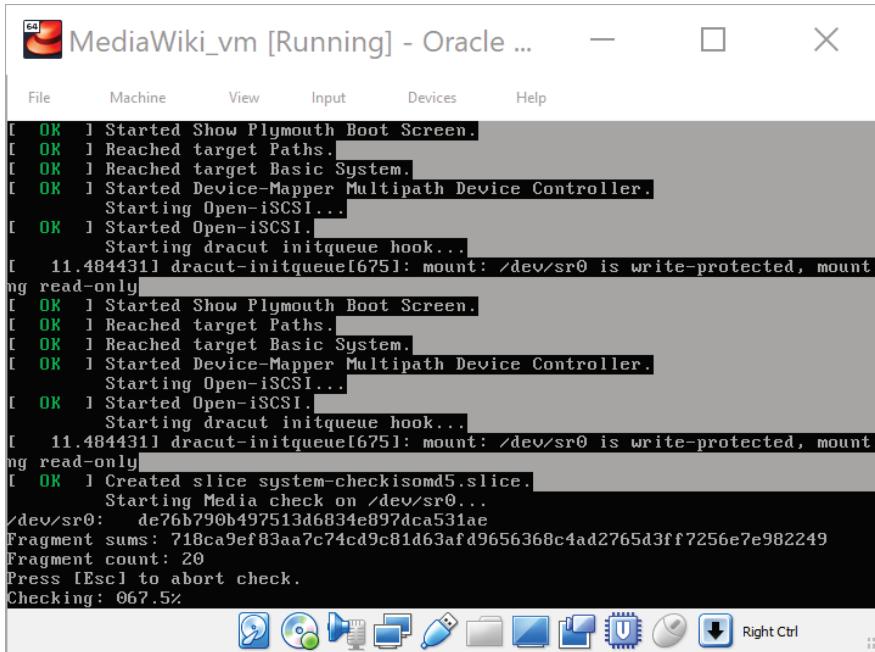


2. A new window will open.

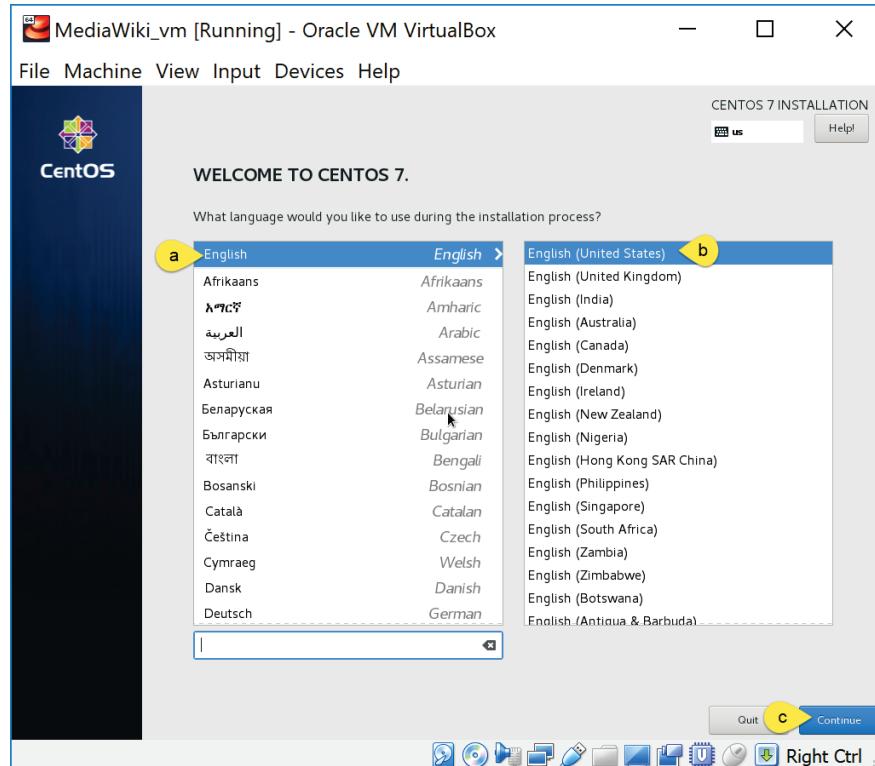


3. Press the Enter key to select the “Test this media & install CentOS 7” option.

4. The process will verify the integrity of the ISO image and launch the CentOS 7 installer.

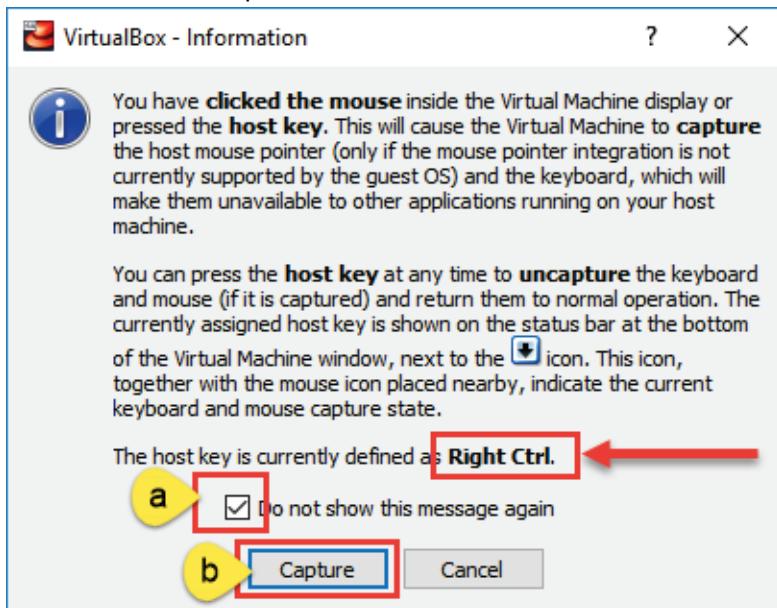


5. Select English from the left-hand menu and English (United States) from the right-hand menu (or your preferred language). Click the Continue button to move forward.



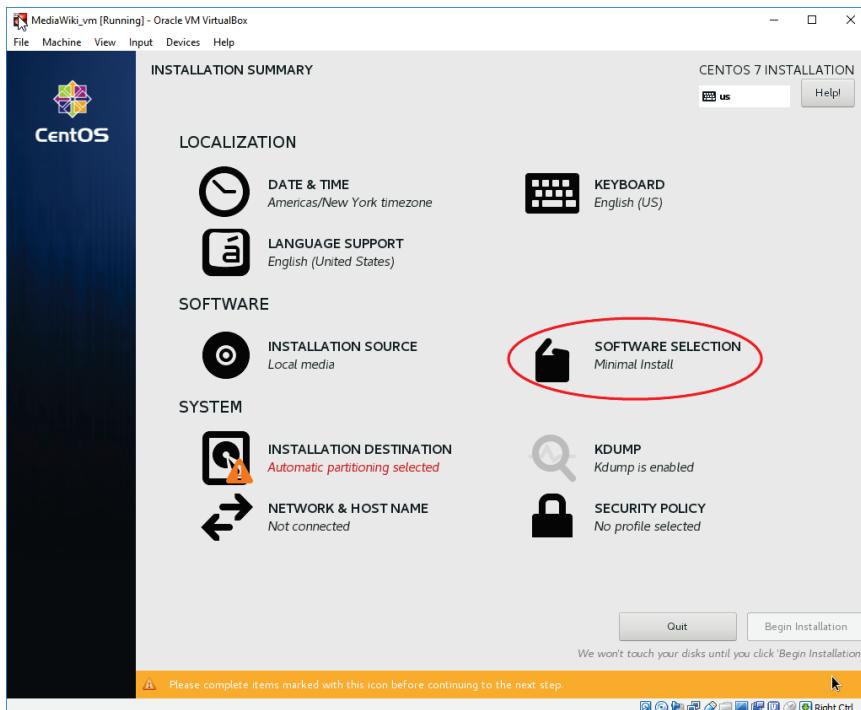
6. A pop-up message will tell you about the “host key”, which by pressing you will be able to navigate out of the virtual machine into your host computer. In this case it is pointing to the “Ctrl” key that it is to the right of the space bar on your keyboard.

- Check “Do not show this message again.”
- Click on “Capture”

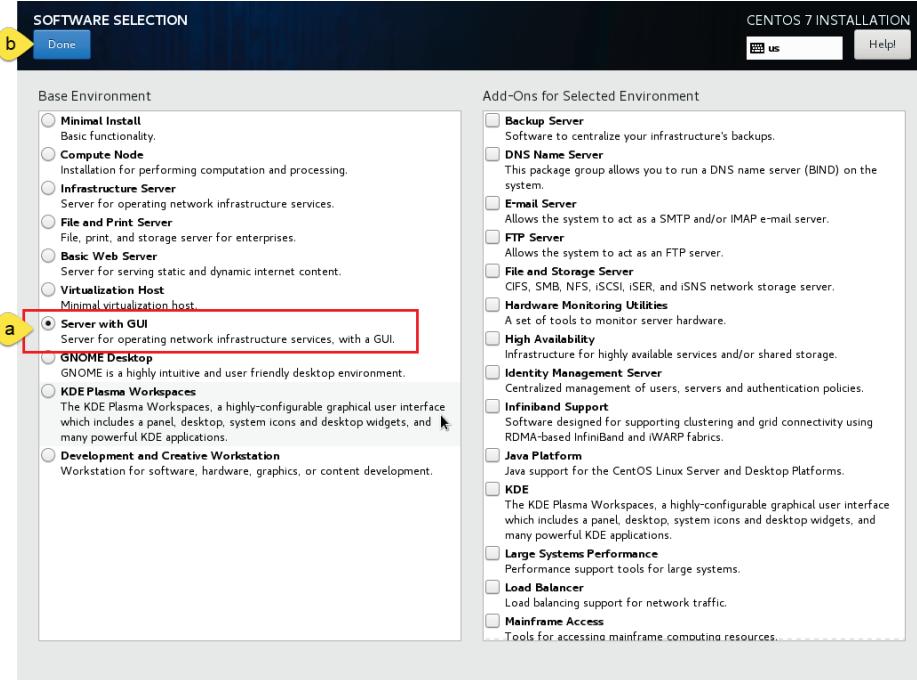


You will still be at the ‘language selection’ window. Click on “Continue” again. You will be directed to the “Installation Summary” window.

7. Click on “SOFTWARE SELECTION”



- On the “Software Selection” window, select “Server with GUI”. On the right side, you will see a list of Add-Ons that could be installed when the OS is installed. Personal preference is to manually install it at a later time.
- Click on “Done” (upper left corner).

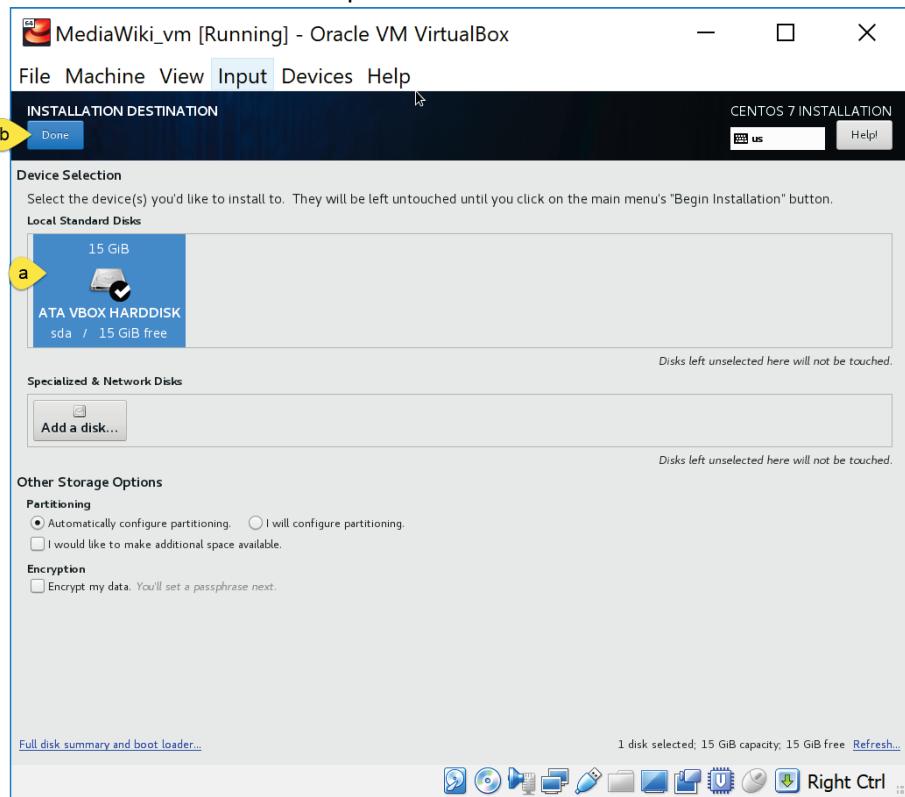


8. Click the INSTALLATION DESTINATION item.

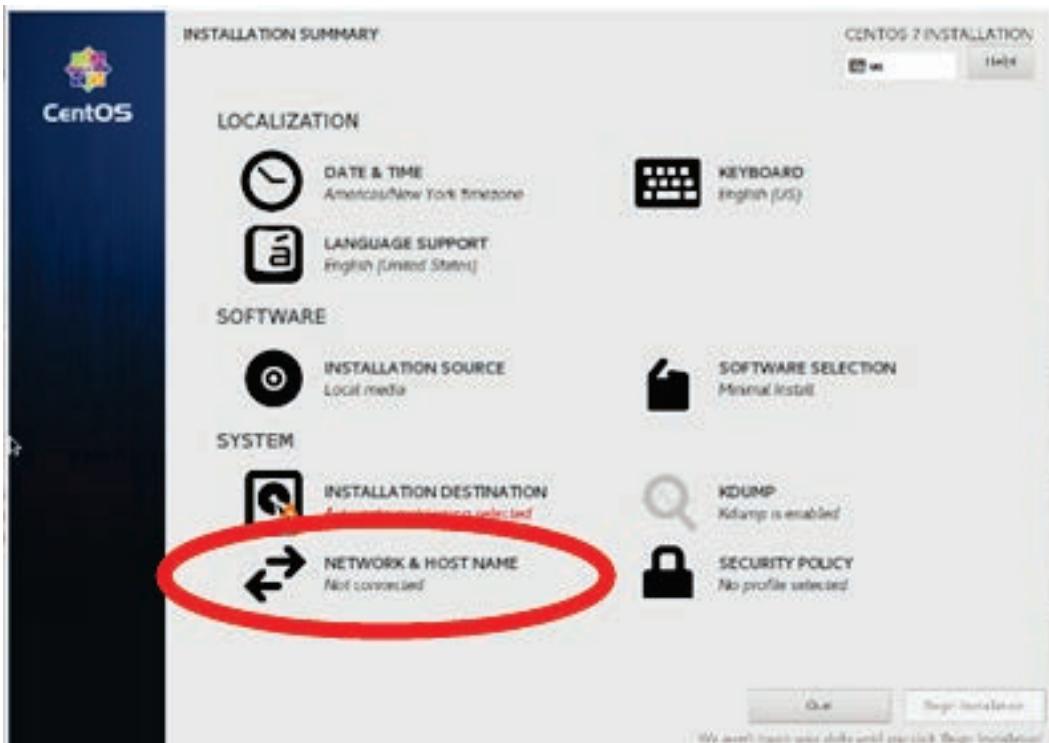


- Click the ATA VBOX HARDDISK option twice, so a black checkmark appears on the ATA image;

- b. Click the Done button at the top of the screen.

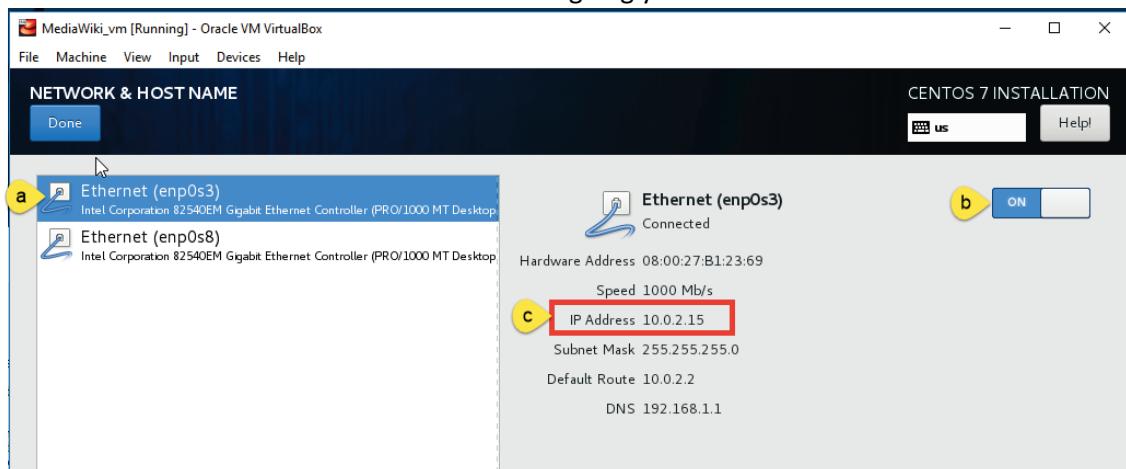


9. Click on “Network & Hostname”.

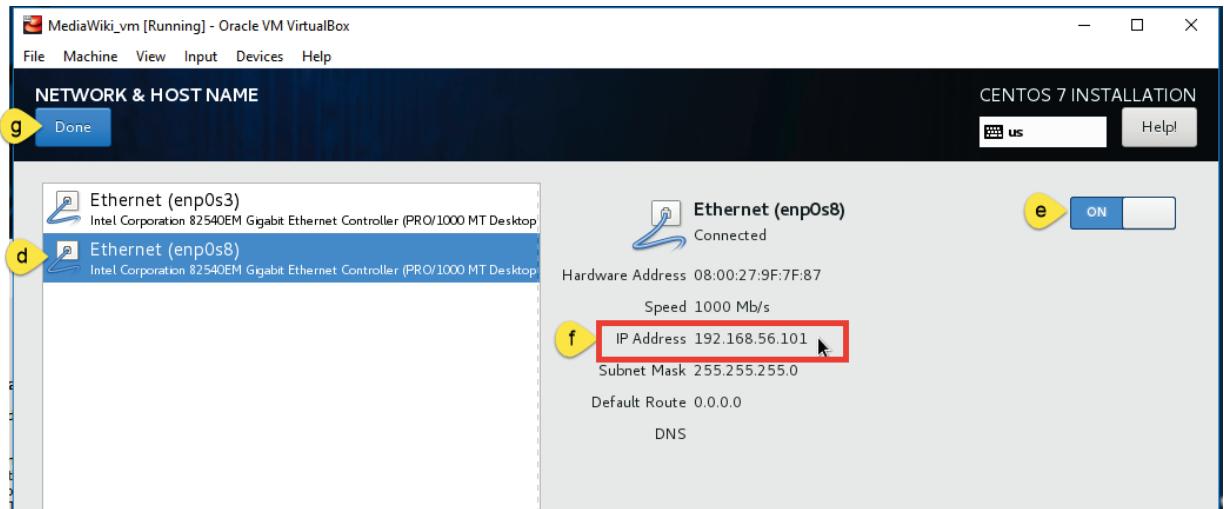


Turn ON the Ethernet connection at the top right of the screen. Network details will fill in as the system obtains an IP address through the network's DHCP service. If a static address is desired, it can be configured here, or through a static lease type within the network's router. Both are out of scope of this document.

- a. Click on one Ethernet connection.
- b. Turn it on
- c. Take a note of the IP address that it is assigning you.

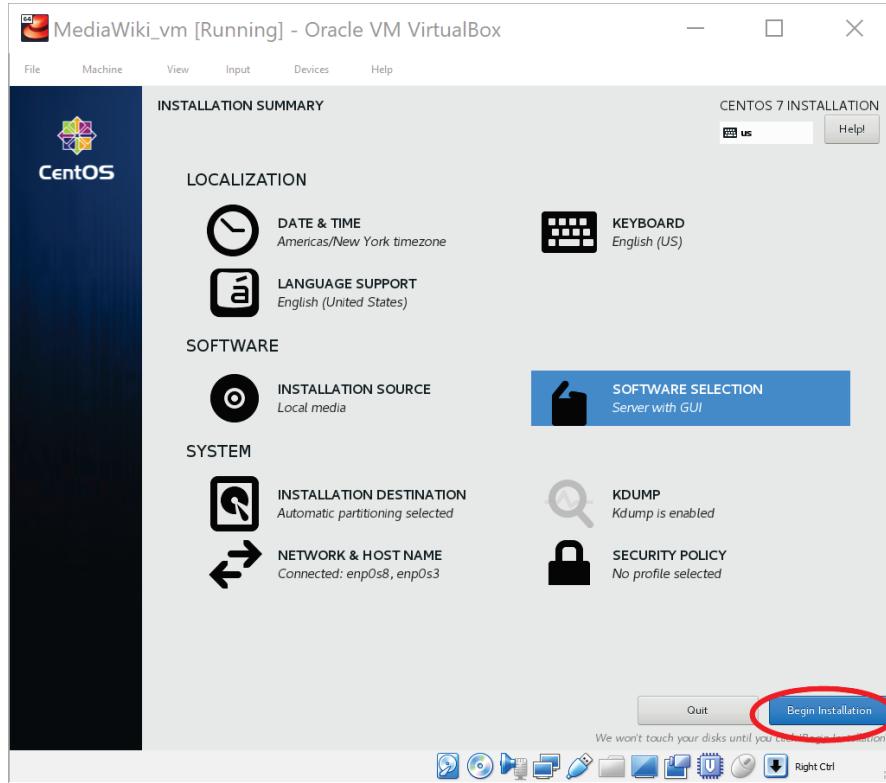


- d. Click on the other ethernet connection.
- e. Turn it on
- f. Write down the assigned IP address; you will need it in the future.
- g. Click the blue “Done” button at the top-right corner of the screen when done with the network configuration.



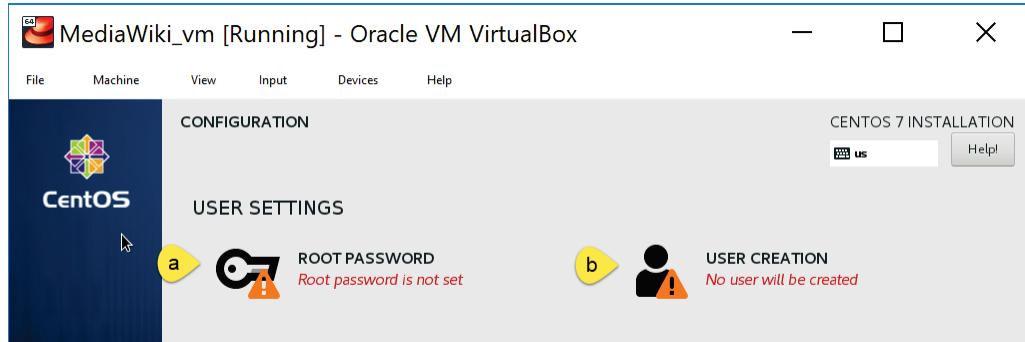
10. If there are any additional items with a yellow warning icon, they will need to be resolved before continuing.

Otherwise, click the Begin Installation button.



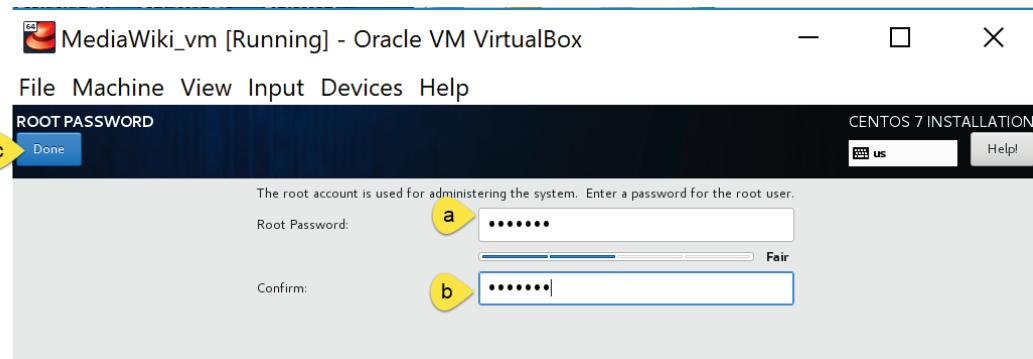
11. The installation will begin and can be tracked by the progress bar at the bottom of the screen.
While the install is running,

- Define the ROOT PASSWORD item. (detailed steps will follow)
- Create a non-administrator user. (detailed steps will follow)



A. Define the ROOT PASSWORD

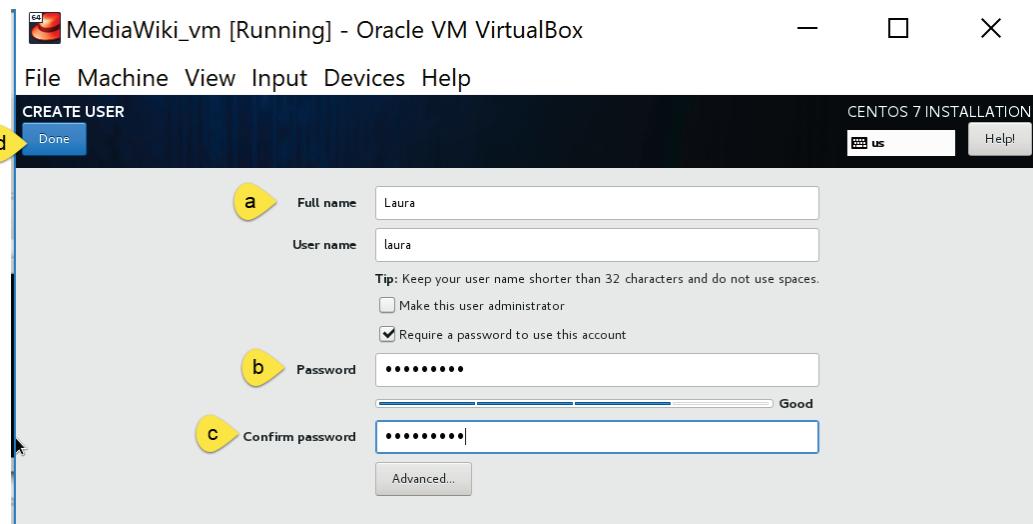
- a. Set the root password.
Do not lose this password. You may want to write it down as you will be using it on multiple occasions.
- b. Re-type the password in the “Confirm” input box.
- c. Click the Done button when complete.



B. USER CREATION.

Create a **non-administrator** user for the system.

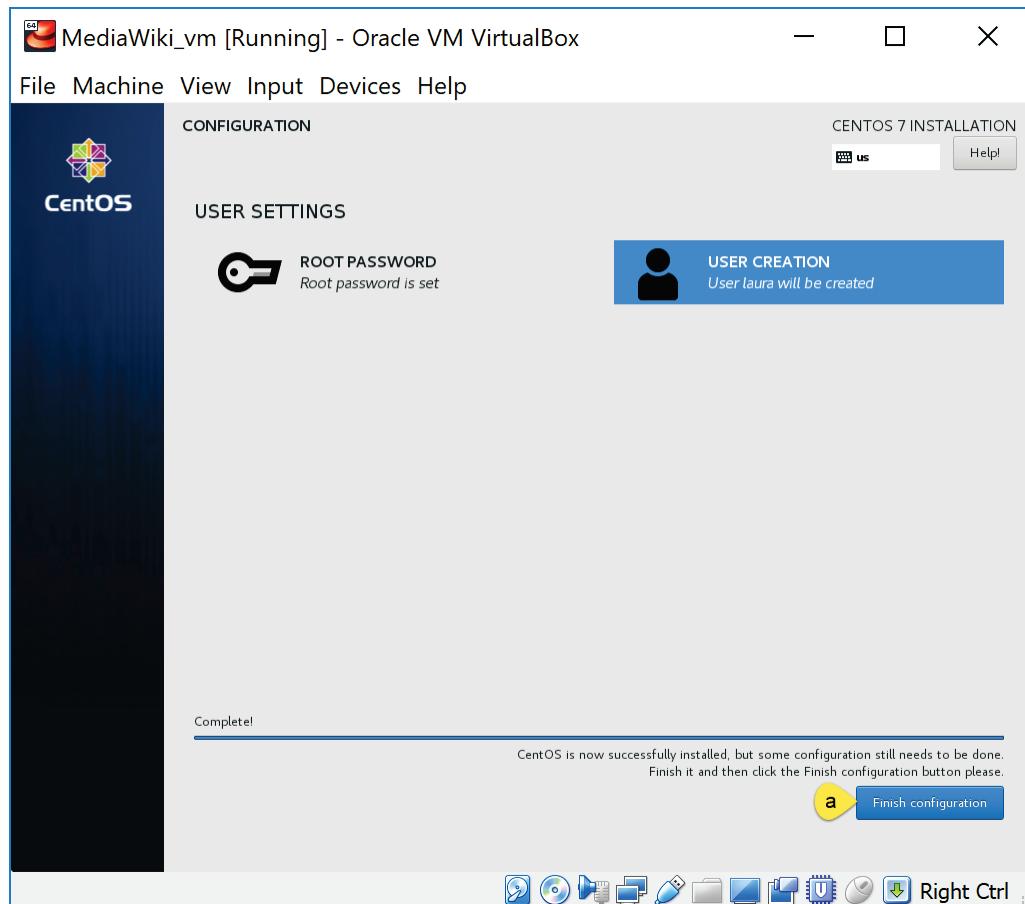
- a. Give it a name and full name.
- b. Define a password
- c. Re-type password
- d. Click on the “Done” button when complete.



12. Finish Configuration

Depending on how quickly the root password and user creation is done, the installation process may not be finished; additional wait time may be required. When the installation process is complete, a blue “Finish Configuration” button will appear.

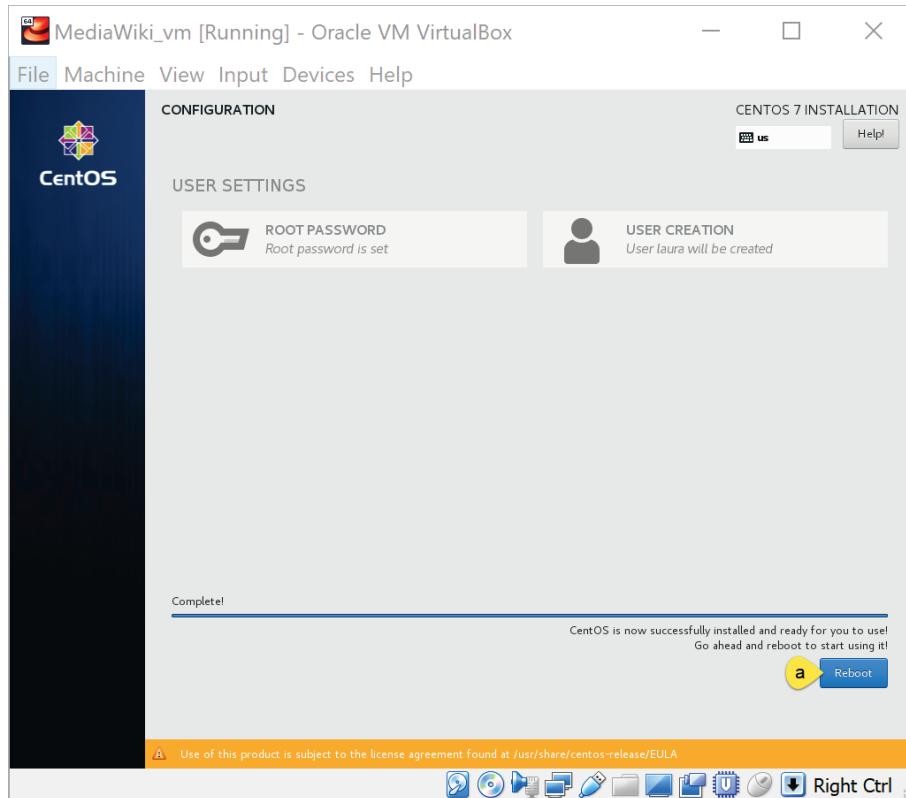
- Click that button to complete the install.



13. Reboot.

Additional configuration items will run. A blue “Reboot” button will appear when the remaining configuration items are complete.

- a. Click “Reboot” button.

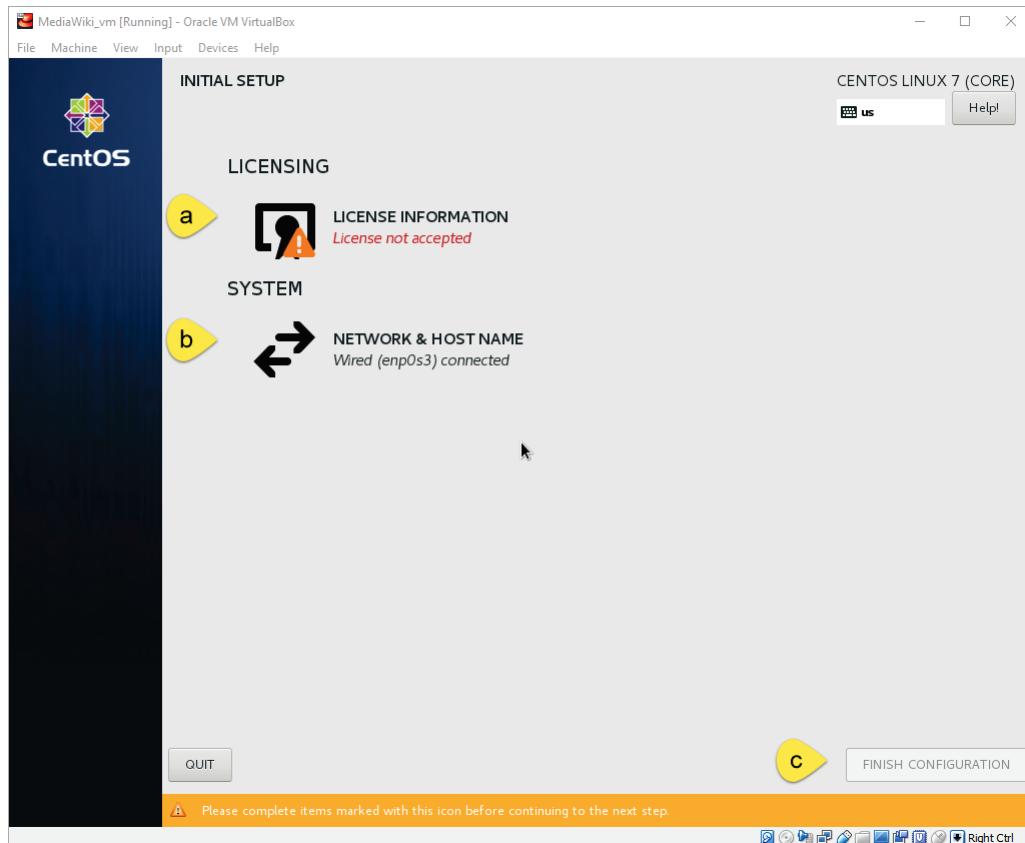


14. Finish Configuration. – While this is taking place the virtual machine may turn black and you might see a series of process running.

The system will bring the “INITIAL SETUP” screen, where you will have to:

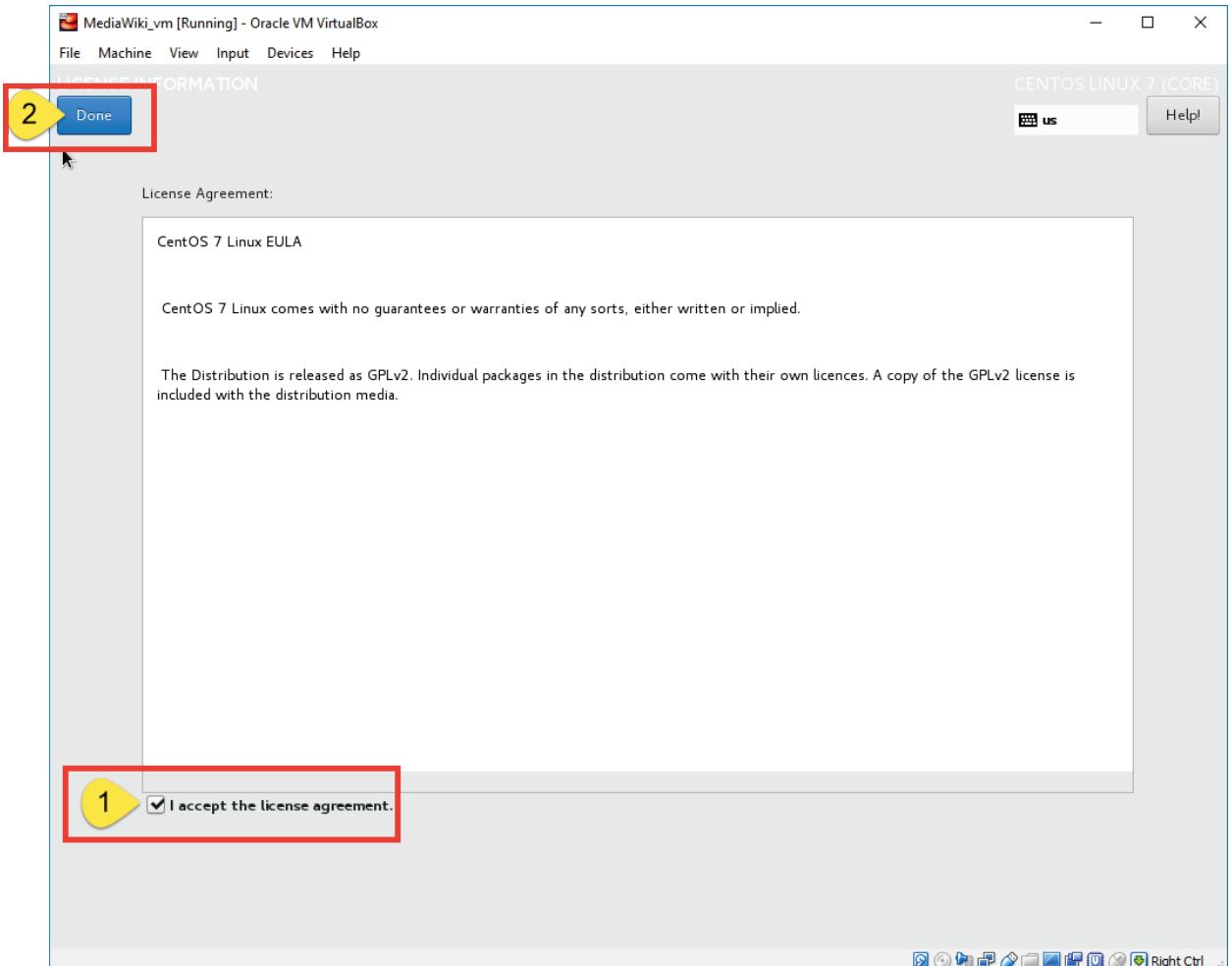
- Accept the licensing
- Enable network connectivity
- Finish configuration

Screenshots of the process will follow.



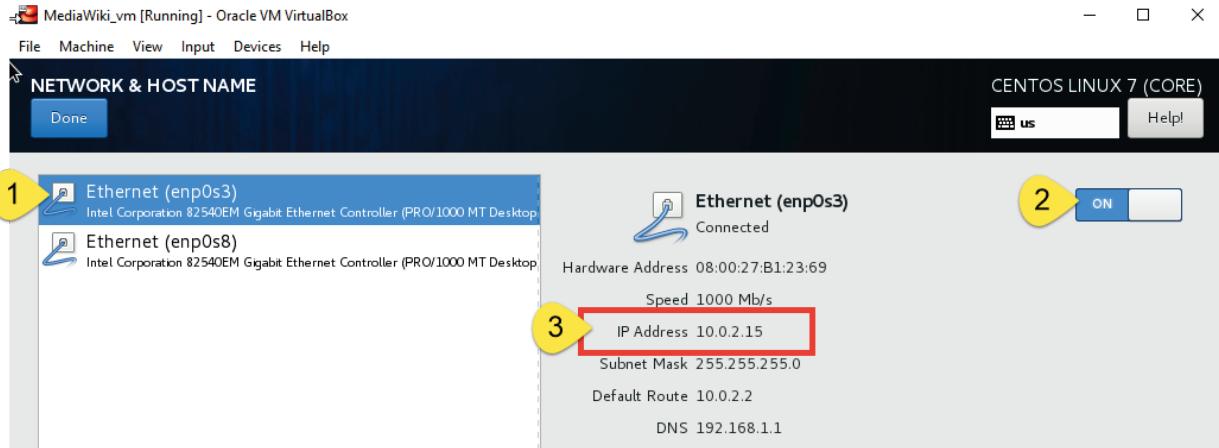
a) Accept Licensing

1. Click on “I accept the license agreement.”
2. Click on “Done”.

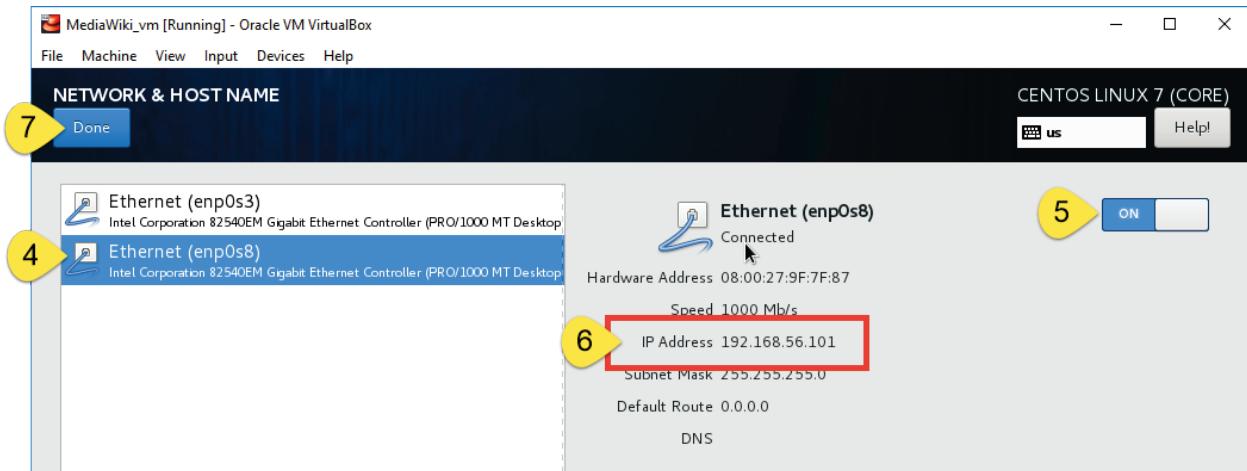


b) Network & Hostname: Enable network configuration

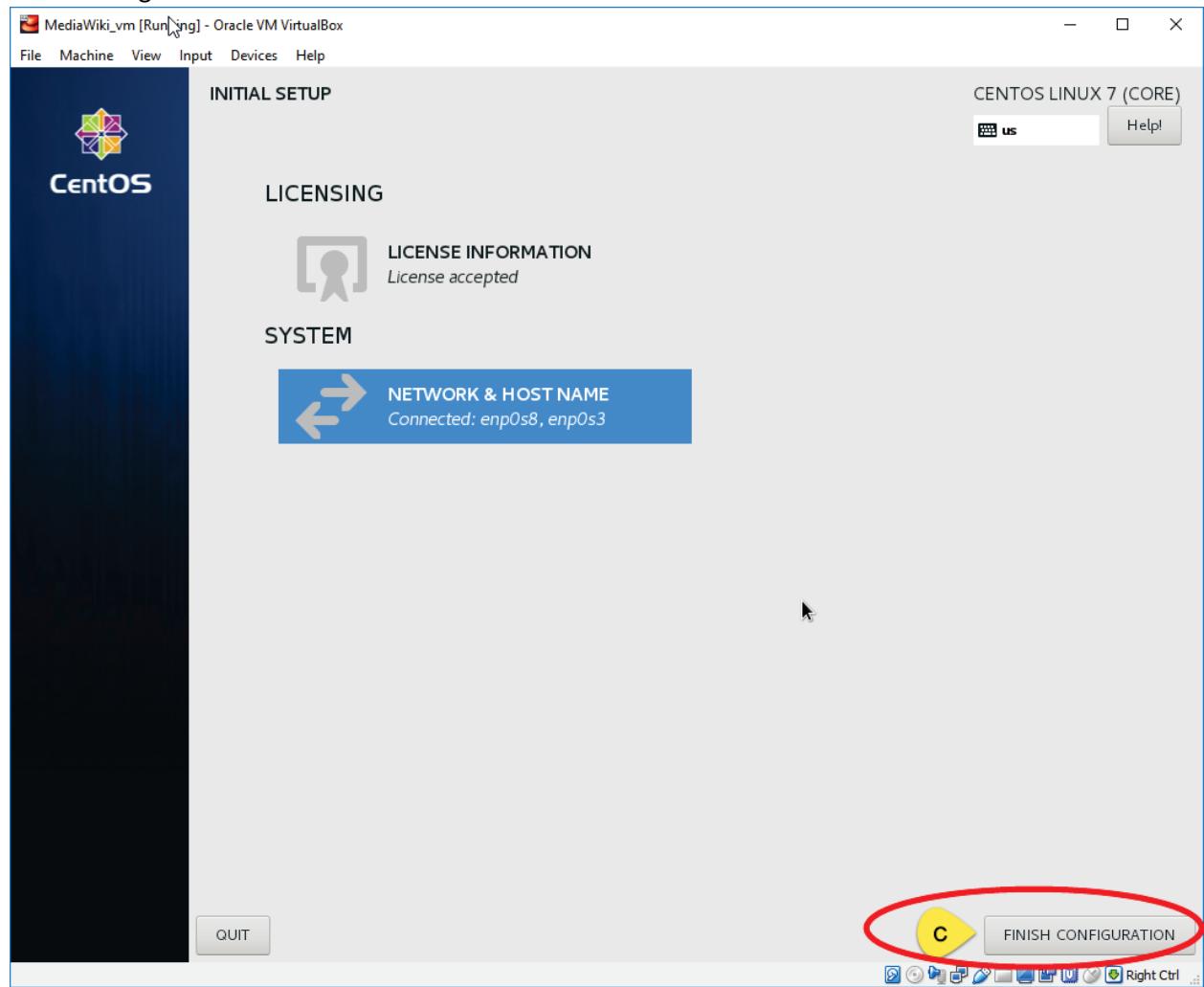
1. Click on one Ethernet
2. Make sure it is on, if it is not, turn it on.
3. Confirm that the given IP address is the same as the one you wrote down.



4. Click on the other Ethernet connection.
5. Make sure it is turned on, if not, turn it on.
6. Confirm that the given IP address is the same as the one you wrote down.
7. Click on "Done"



c) Finish configuration

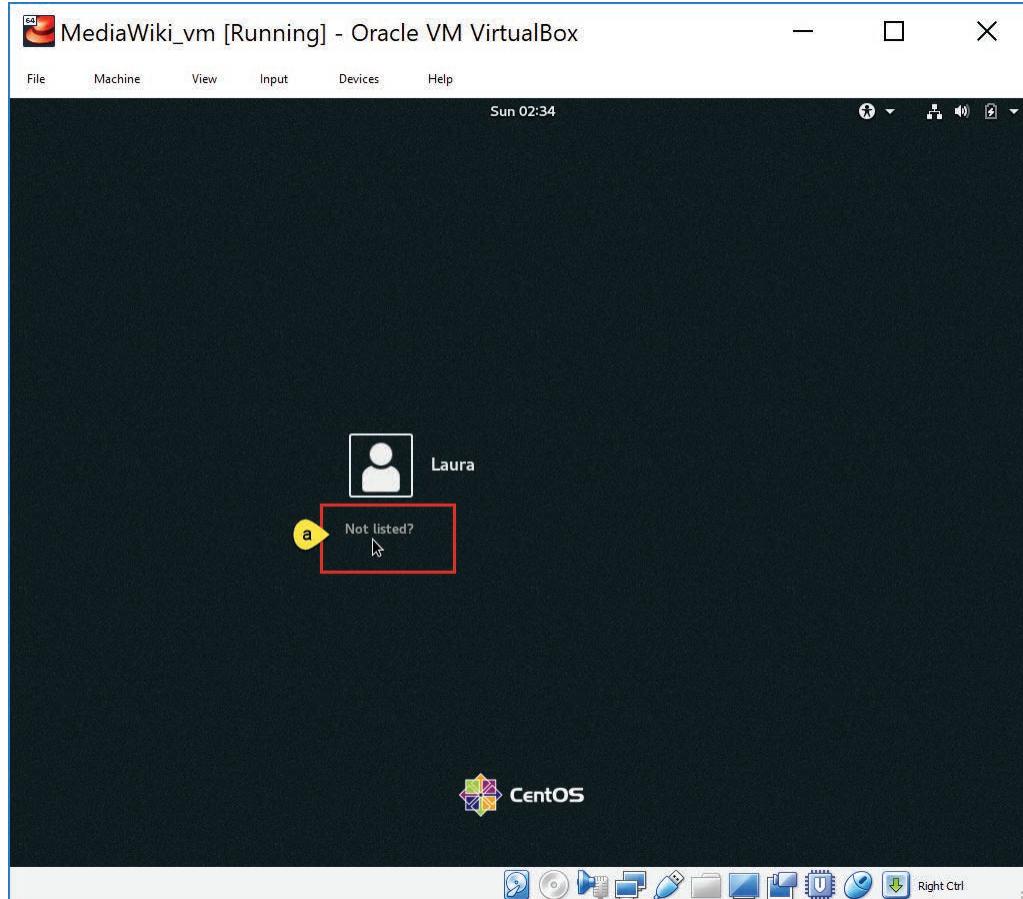


Note: This might take about 15 minutes. While this is taking place the virtual machine may turn black and you might see a series of process running.

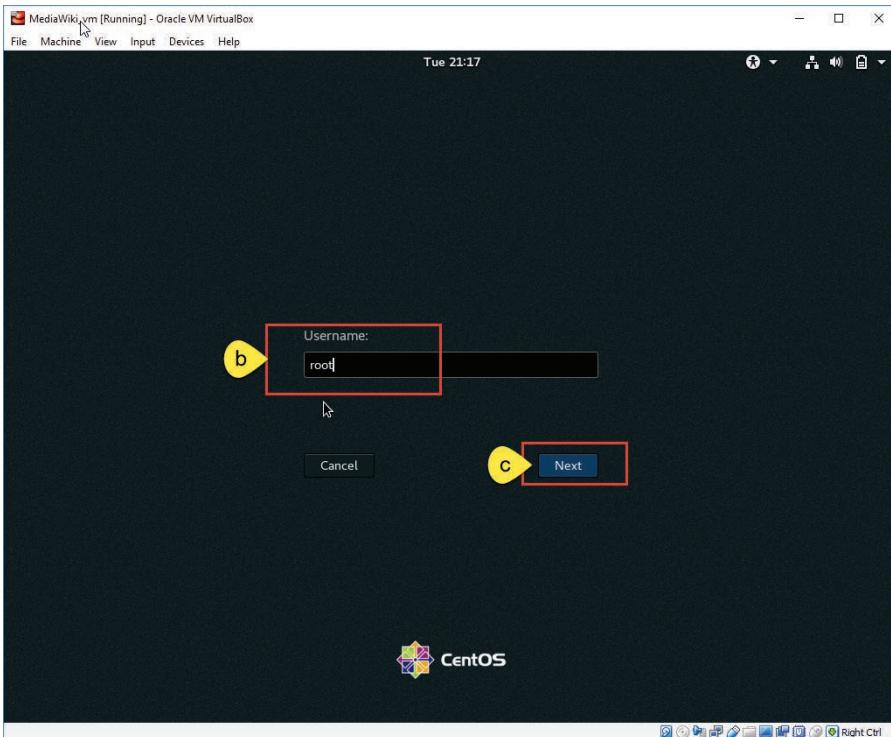
15. Sign in.

Once it is done rebooting, the virtual machine will start. You will be greeted with a user interface to log in. By default, the created user, Laura -in this case, will be displayed.

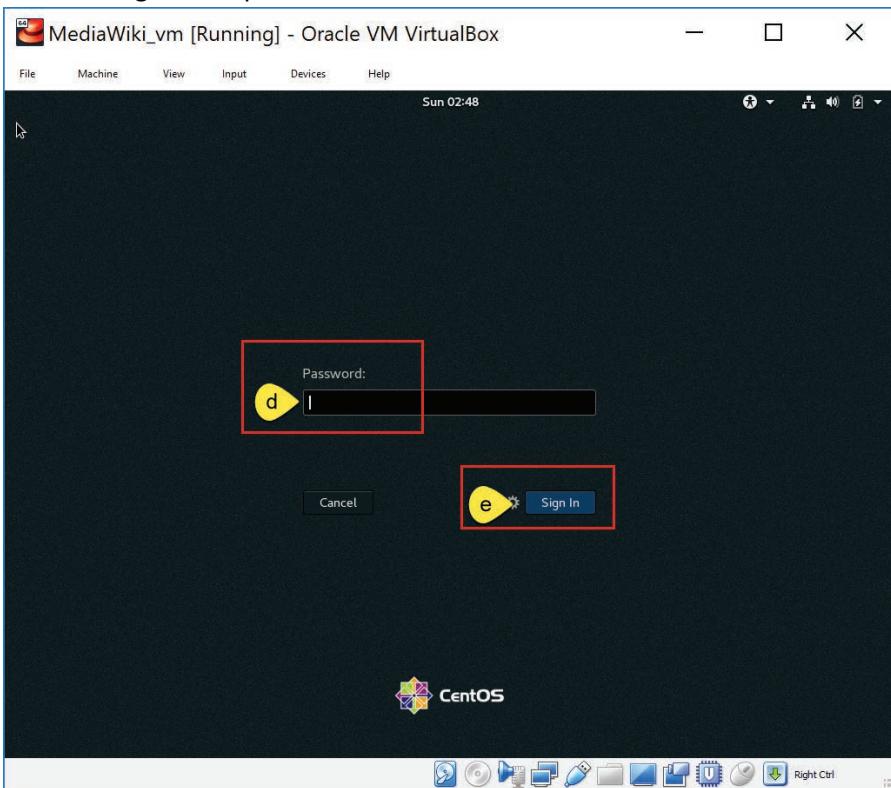
- a) Click on “Not Listed”.



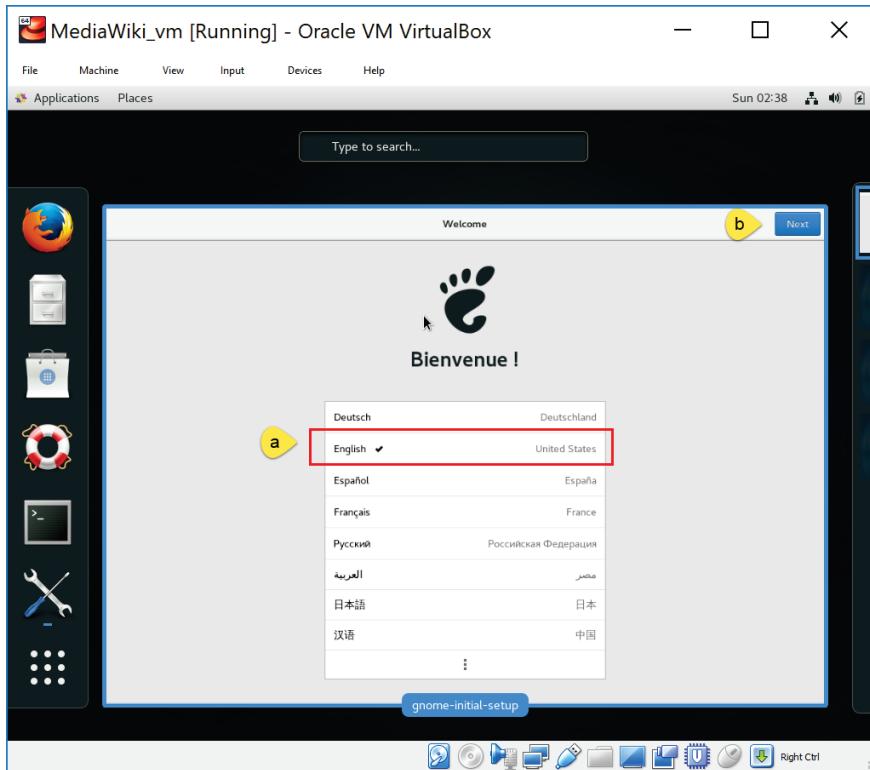
- b) Type in “root”
- c) Press “Next”



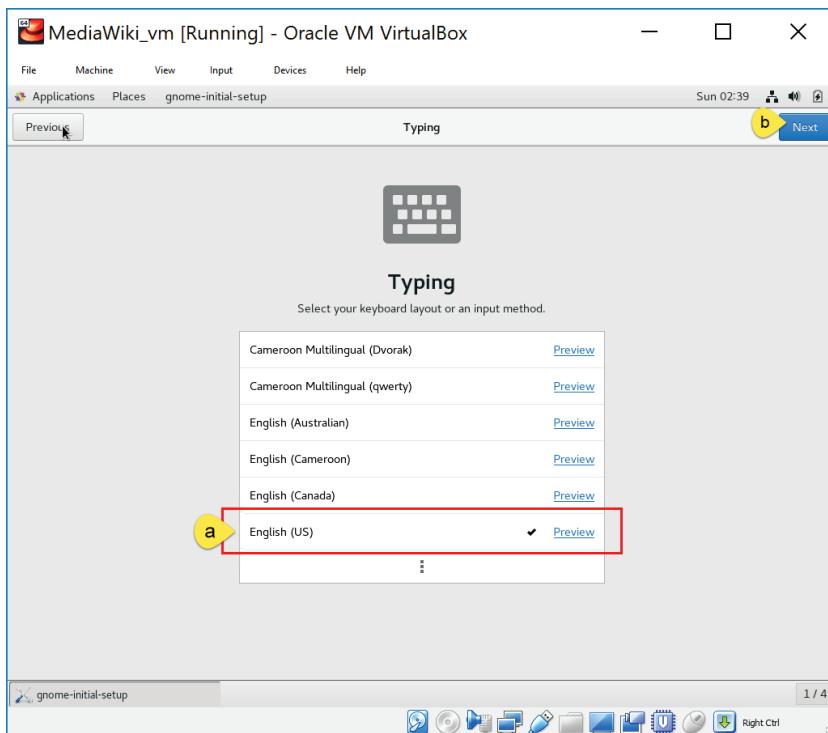
- d) Type in the password you defined for the root user at creation ('root' user and the password you assigned a couple of steps ago),
- e) Click on “Sign in” or press ‘Enter’



16. Welcome screen. Confirm that the correct language is selected and click on “Next”.

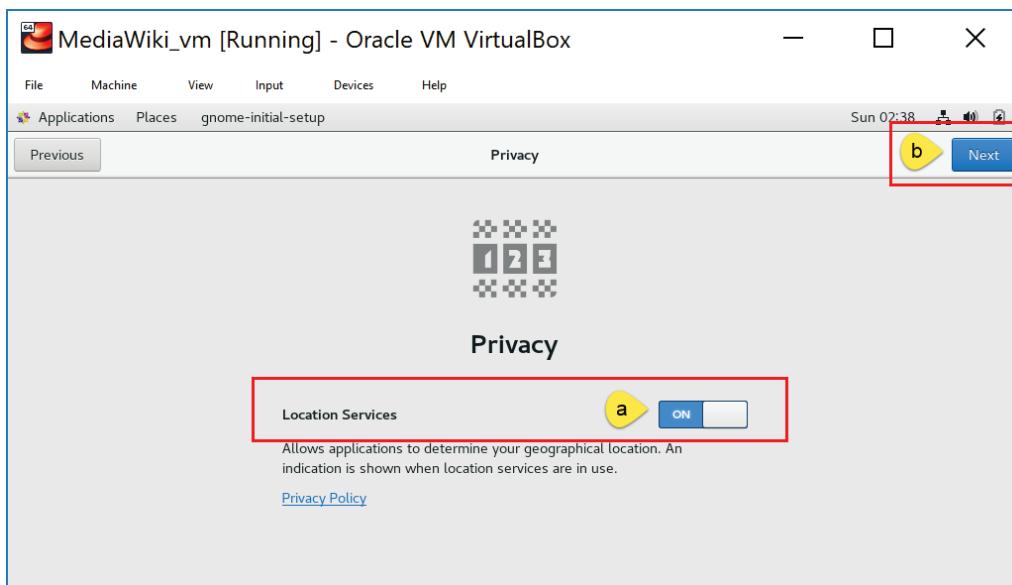


17. Confirm that the Keyboard layout is the one of your preference and click on “Next”.

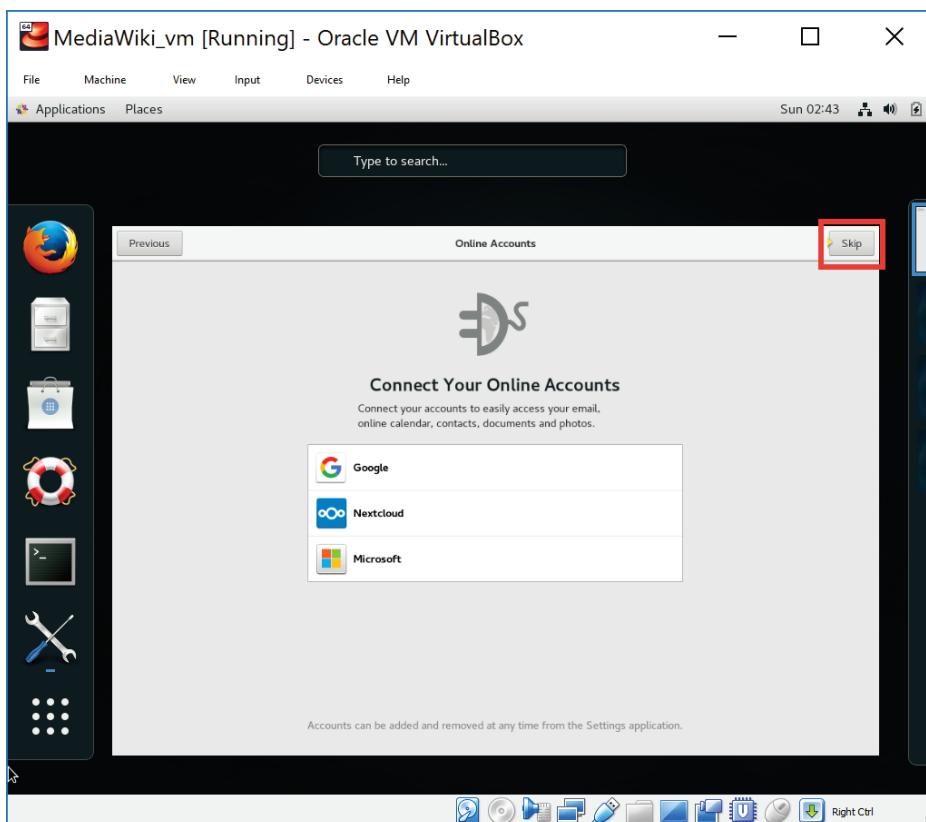


18. Privacy:

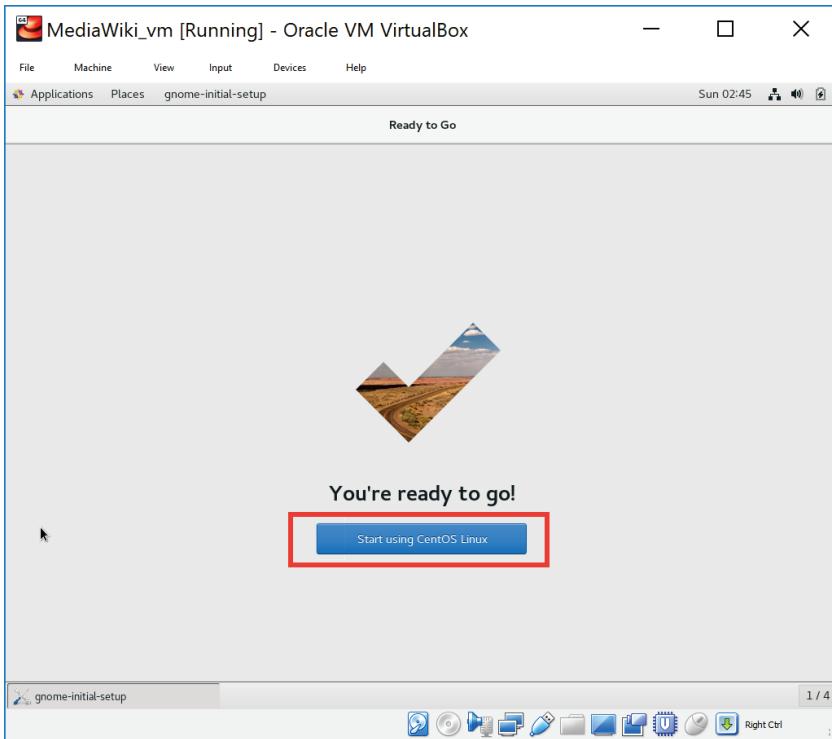
- a. Confirm that the “Location Services” is “ON”.
- b. Click on “Next”.



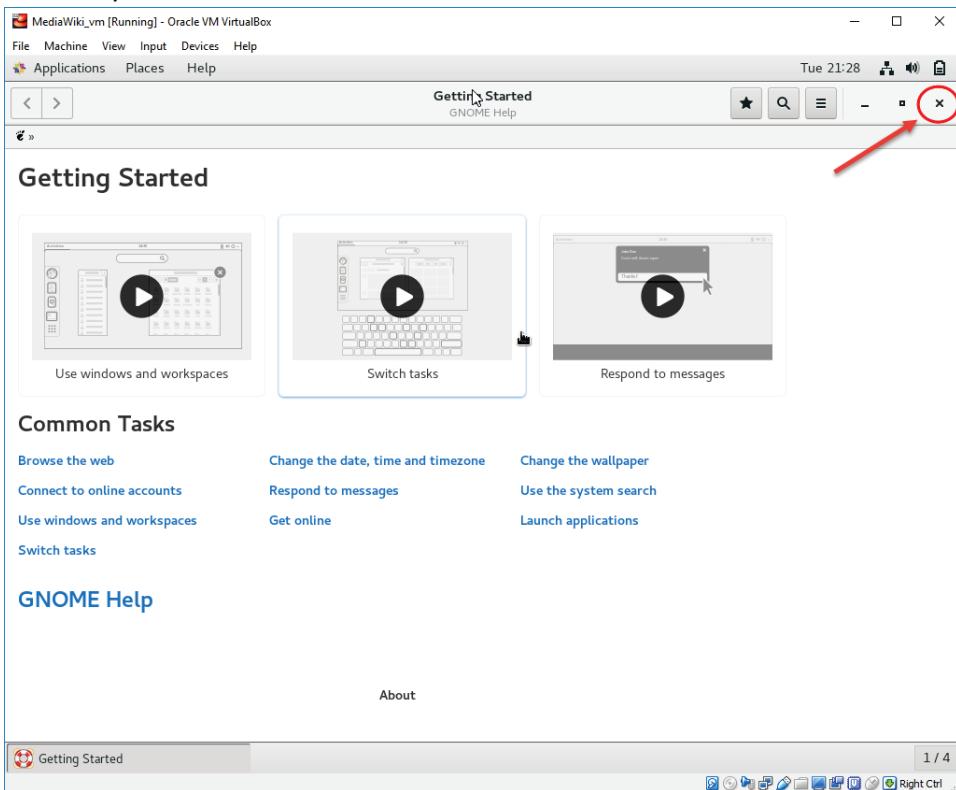
19. You may skip the Connect Your Online Accounts page.



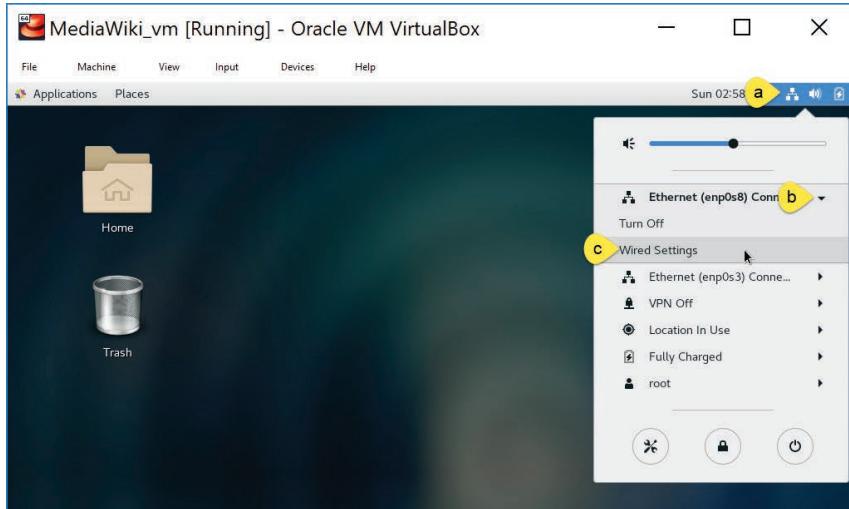
20. Click on “Start using CentOS Linux”



21. Getting Started. You may watch getting started videos. Close the window when you are done and ready to start.



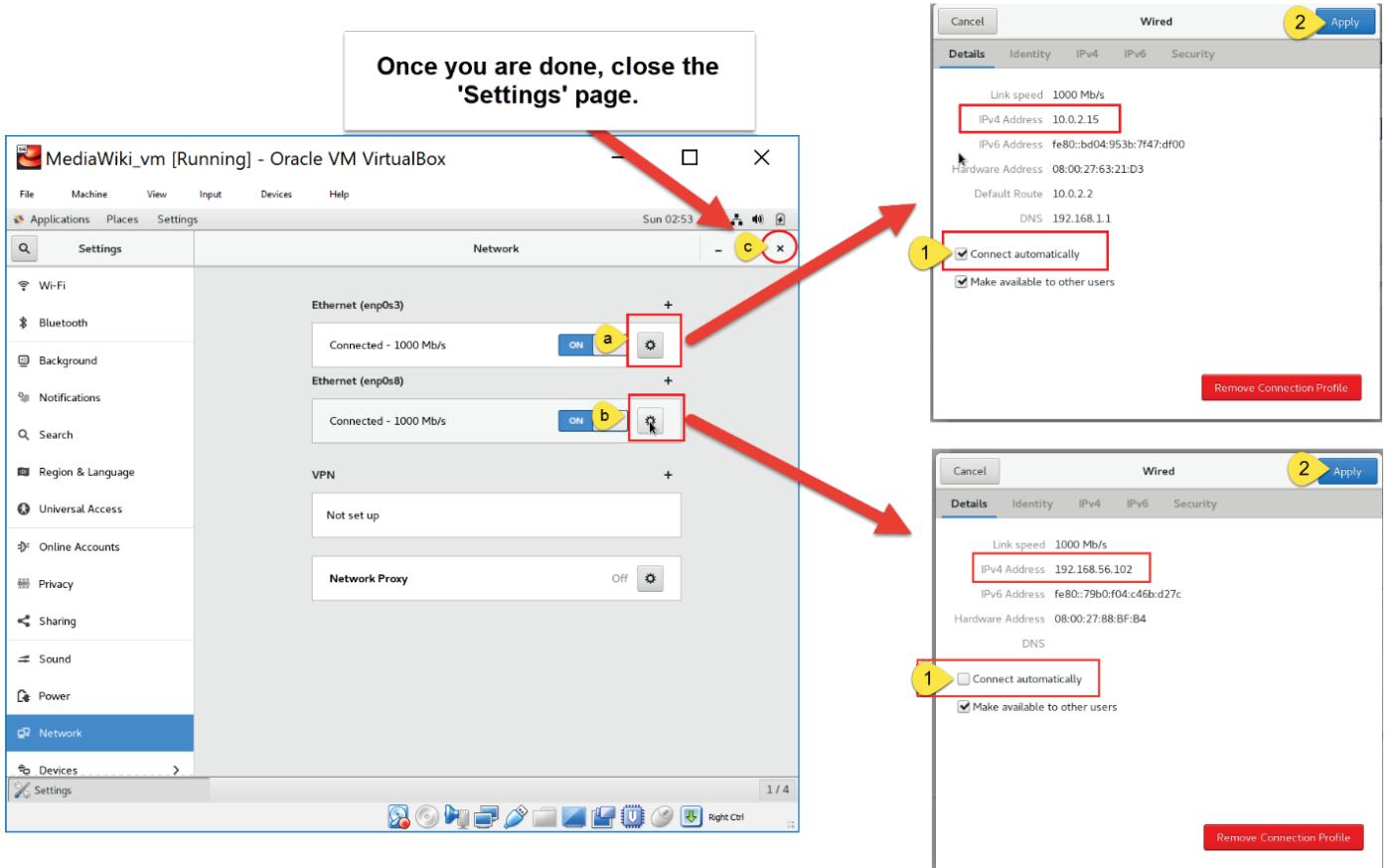
22. Select the “Network” icon on the upper right corner.
- Click on the arrow of the “Ethernet connection”
 - Click on the arrow.
 - Click on “Wired Settings”



23. Click on the “Settings” gear of each Ethernet connection that you may have and confirm they are set to “Connect automatically”. Write down the given IP address if you have not done already.

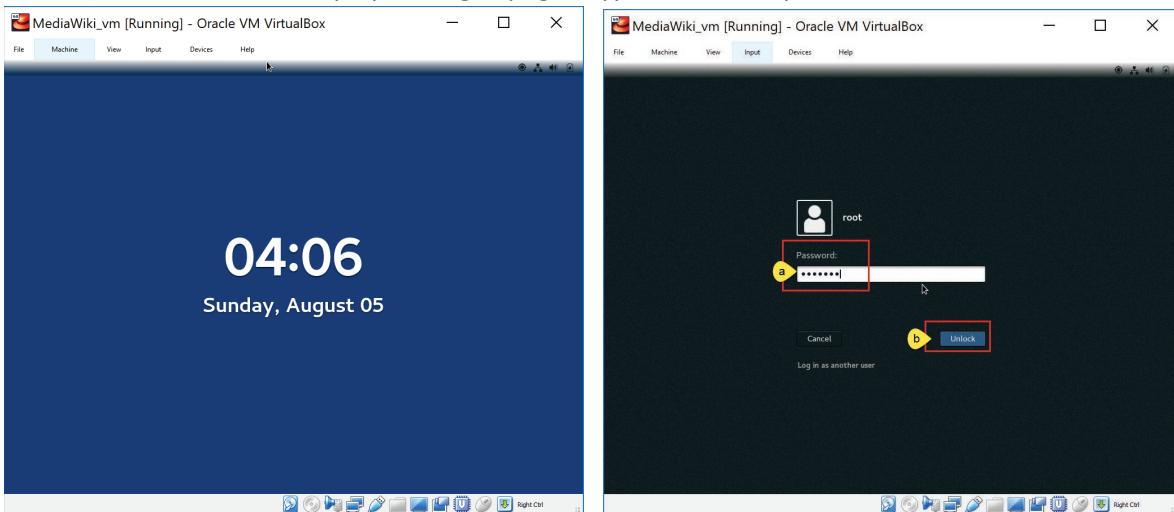
Once you are done, close the ‘Settings’ page.

- Click on the gear icon of the first Ethernet
 - Check to “Connect Automatically”
 - Click on “Apply”
- Click on the gear icon of the second Ethernet
 - Check to “Connect Automatically”
 - Click on “Apply”
- Click on the “X” to close the “Network” window.



Note:

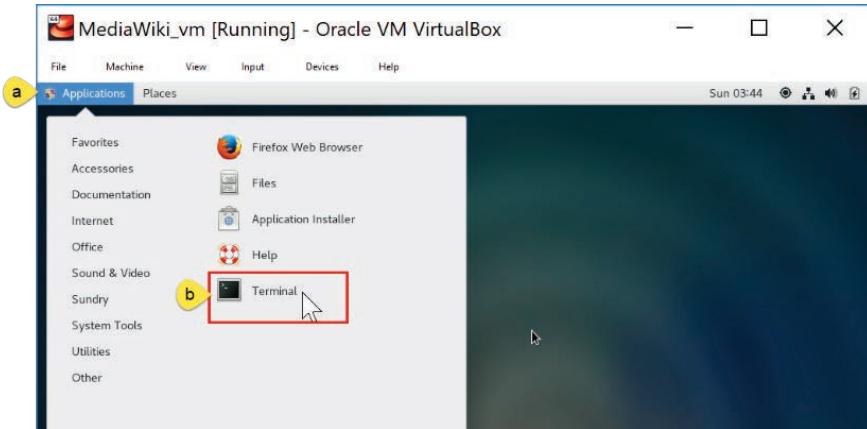
If at any point the machine goes to sleep mode, you will see a dark screen. Click on it to wake it up. You will see a blue screen with date and time: tap on the “Enter” key or use the scrolling button (center) in the mouse to display the log in page. Type in the root password and click on “Unlock”.



Preparing for Software Installation

1. Access the Terminal

- a. Click on “Applications”
- b. Click on “Terminal”



2. Check connectivity

```
ping google.com
```

Watch as the packets are transmitted.

Use “CTRL + C” to stop.

Look for a confirmation “0% packet loss”. If this is not the case, go back and check your network connectivity.

A screenshot of a terminal window with a black background and white text. The window title is "root@localhost:~". The terminal shows the command "ping google.com" being run. The output details 7 packets transmitted, all received with 0% packet loss, and a round-trip time of 601ms. The "rtt min/avg/max/mdev" values are also listed. The terminal ends with a prompt "[root@localhost ~]#".

```
root@localhost:~ [root@localhost ~]# ping google.com
PING google.com (172.217.7.174) 56(84) bytes of data.
64 bytes from iad30s09-in-f14.1e100.net (172.217.7.174): icmp_seq=1 ttl=55 time=16.8 ms
64 bytes from iad30s09-in-f14.1e100.net (172.217.7.174): icmp_seq=2 ttl=55 time=10.8 ms
64 bytes from iad30s09-in-f14.1e100.net (172.217.7.174): icmp_seq=3 ttl=55 time=13.3 ms
64 bytes from iad30s09-in-f14.1e100.net (172.217.7.174): icmp_seq=4 ttl=55 time=11.5 ms
64 bytes from iad30s09-in-f14.1e100.net (172.217.7.174): icmp_seq=5 ttl=55 time=15.6 ms
64 bytes from iad30s09-in-f14.1e100.net (172.217.7.174): icmp_seq=6 ttl=55 time=12.1 ms
64 bytes from iad30s09-in-f14.1e100.net (172.217.7.174): icmp_seq=7 ttl=55 time=15.6 ms
^C
--- google.com ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 601ms
rtt min/avg/max/mdev = 10.851/13.736/16.897/2.162 ms
[root@localhost ~]#
```

Type in “clear” to clear the terminal.

```
clear
```

3. Make sure that EPEL (Extra Packages for Enterprise Linux) is installed. This is to help download and install other software from the internet.

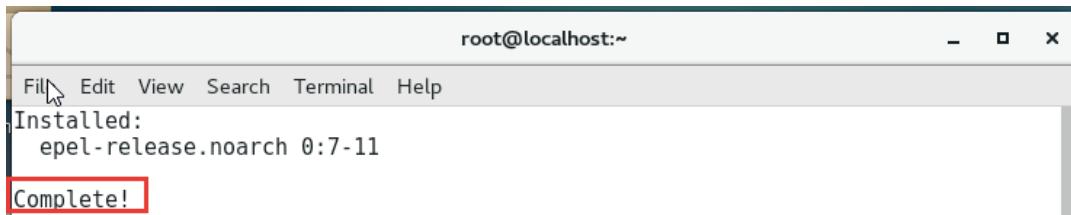
```
yum epel release
```

If it is already installed you will see a confirmation message saying so, if not it will start checking and downloading for “base”, “extra”, and “updates” packages.
In my case it has been already installed.

If you get a message saying “No such command: epel”, then you need to install it.

```
yum -y install epel-release
```

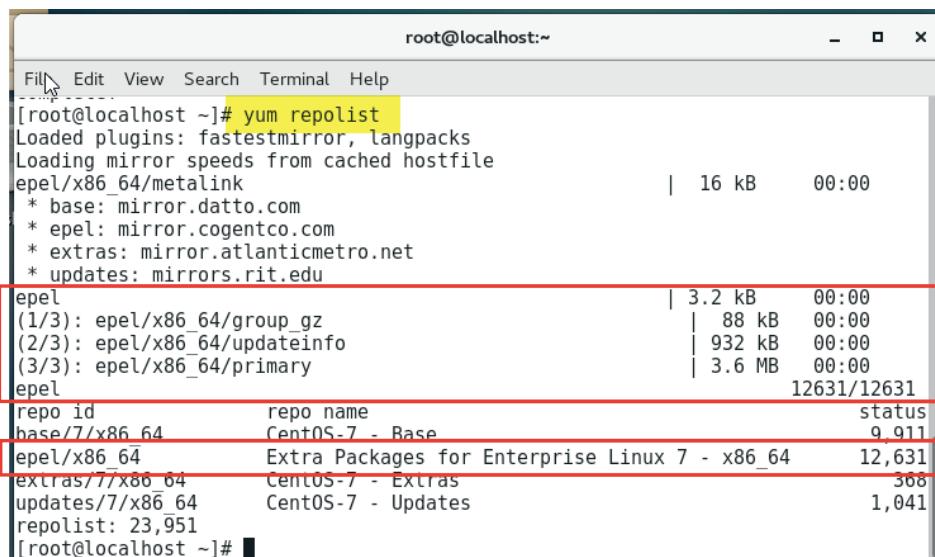
Look for a “Complete!” confirmation message at the end.



```
root@localhost:~  
File Edit View Search Terminal Help  
Installed:  
epel-release.noarch 0:7-11  
Complete!
```

To confirm that you have it installed, run the following command:

```
yum repolist
```



```
root@localhost:~  
File Edit View Search Terminal Help  
[root@localhost ~]# yum repolist  
Loaded plugins: fastestmirror, langpacks  
Loading mirror speeds from cached hostfile  
epel/x86_64/metalink | 16 kB 00:00  
* base: mirror.datto.com  
* epel: mirror.cogentco.com  
* extras: mirror.atlanticmetro.net  
* updates: mirrors.rit.edu  
epel | 3.2 kB 00:00  
(1/3): epel/x86_64/group_gz | 88 kB 00:00  
(2/3): epel/x86_64/updateinfo | 932 kB 00:00  
(3/3): epel/x86_64/primary | 3.6 MB 00:00  
epel 12631/12631  
repo id repo name status  
base/7/x86_64 CentOS-7 - Base 9,011  
epel/x86_64 Extra Packages for Enterprise Linux 7 - x86_64 12,631  
extras/7/x86_64 CentOS-7 - Extras 308  
updates/7/x86_64 CentOS-7 - Updates 1,041  
repolist: 23,951  
[root@localhost ~]#
```

4. Check for any necessary package updates.

```
yum update
```

It will be scanning all the packages that are available on the system. We will see a list of all the pending updates. Type “**y**” to confirm to update packages. Type in again “**y**” to accept installation.

Look for a “Complete!” confirmation message at the end.

Note: that this might take several minutes.

```
root@localhost:~#
File Edit View Search Terminal Help
rsyslog           x86_64 8.24.0-16.el7_5.4      updates 607 k
selinux-policy     noarch 3.13.1-192.el7_5.4    updates 453 k
selinux-policy-targeted noarch 3.13.1-192.el7_5.4    updates 6.6 M
sos                noarch 3.5-9.el7.centos       updates 414 k
spice-glib         x86_64 0.34-3.el7_5.1        updates 381 k
spice-gtk3         x86_64 0.34-3.el7_5.1        updates 86 k
spice-server       x86_64 0.14-0-2.el7_5.4      updates 492 k
sssd-client        x86_64 1.16-0-19.el7_5.5      updates 196 k
sudo               x86_64 1.8.19p2-14.el7_5       updates 1.1 M
systemtap-runtime  x86_64 3.2-8.el7_5          updates 404 k
tzdata             noarch 2018e-3.el7          updates 482 k
tzdata-java        noarch 2018e-3.el7          updates 185 k
vdo                x86_64 6.1.0-168-18        updates 603 k
xorg-x11-drv-wacom x86_64 0.34-2-5.el7       updates 306 k
yum-plugin-fastestmirror noarch 1.1.31-46.el7_5   updates 33 k
yum-utils          noarch 1.1.31-46.el7_5       updates 120 k

Transaction Summary
=====
Install  1 Package
Upgrade 132 Packages

Total download size: 326 M
Is this ok [y/d/N]: 
```

```
root@localhost:~#
File Edit View Search Terminal Help
qemu-kvm.x86_64 10:1.5.3-156.el7_5.3
qemu-kvm-common.x86_64 10:1.5.3-156.el7_5.3
radvd.x86_64 0:1.9.2-9.el7_5.4
rasdaemon.x86_64 0:0.4.1-33.1.el7_5
rdma-core.x86_64 0:15-7.el7_5
rsyslog.x86_64 0:8.24.0-16.el7_5.4
selinux-policy.noarch 0:3.13.1-192.el7_5.4
selinux-policy-targeted.noarch 0:3.13.1-192.el7_5.4
sos.noarch 0:3.5-9.el7.centos
spice-glib.x86_64 0:0.34-3.el7_5.1
spice-gtk3.x86_64 0:0.34-3.el7_5.1
spice-server.x86_64 0:0.14-0-2.el7_5.4
sssd-client.x86_64 0:1.16-0-19.el7_5.5
sudo.x86_64 0:1.8.19p2-14.el7_5
systemtap-runtime.x86_64 0:3.2-8.el7_5
tzdata.noarch 0:2018e-3.el7
tzdata-java.noarch 0:2018e-3.el7
vdo.x86_64 0:6.1.0-168-18
xorg-x11-drv-wacom.x86_64 0:0.34-2-5.el7
yum-plugin-fastestmirror.noarch 0:1.1.31-46.el7_5
yum-utils.noarch 0:1.1.31-46.el7_5

Complete!
[root@localhost ~]#
```

Install Apache web server

```
yum install httpd
```

1. To confirm installation type in: y
2. Confirm once more, type in: y
3. Look for a “Complete!” confirmation message at the end.

The image shows two terminal windows side-by-side. The left window shows the command `yum install httpd` being run, followed by the dependency resolution and package installation process. The right window shows the completion of the transaction with a "Complete!" message.

```
[root@localhost ~]# yum install httpd
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: repol.ash.innoscate.net
 * extras: centos.servint.com
 * updates: repol.ash.innoscate.net
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.6-80.el7.centos.1 will be installed
--> Processing Dependency: httpd-tools = 2.4.6-80.el7.centos.1 for package: httpd-2.4.6-80.el7.centos.1.x86_64
--> Processing Dependency: /etc/mime.types for package: httpd-2.4.6-80.el7.centos.1.x86_64
--> Processing Dependency: libaprutil-1.so.0()(64bit) for package: httpd-2.4.6-80.el7.centos.1.x86_64
--> Processing Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.6-80.el7.centos.1.x86_64
--> Running transaction check
--> Package apr.x86_64 0:1.4.8-3.el7_4.1 will be installed
--> Package apr-util.x86_64 0:1.5.2-6.el7 will be installed
--> Package httpd-tools.x86_64 0:2.4.6-80.el7.centos.1 will be installed
--> Package mailcap.noarch 0:2.1.41-2.el7 will be installed
--> Finished Dependency Resolution
```

```
root@localhost:~#
File Edit View Search Terminal Help
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : apr-1.4.8-3.el7_4.1.x86_64 1/5
Installing : apr-util-1.5.2-6.el7.x86_64 2/5
Installing : httpd-tools-2.4.6-80.el7.centos.1.x86_64 3/5
Installing : mailcap-2.1.41-2.el7.noarch 4/5
Installing : httpd-2.4.6-80.el7.centos.1.x86_64 5/5
Verifying : mailcap-2.1.41-2.el7.noarch 1/5
Verifying : httpd-tools-2.4.6-80.el7.centos.1.x86_64 2/5
Verifying : apr-util-1.5.2-6.el7.x86_64 3/5
Verifying : apr-1.4.8-3.el7_4.1.x86_64 4/5
Verifying : httpd-2.4.6-80.el7.centos.1.x86_64 5/5
Installed:
httpd.x86_64 0:2.4.6-80.el7.centos.1

Dependency Installed:
apr.x86_64 0:1.4.8-3.el7_4.1           apr-util.x86_64 0:1.5.2-6.el7
httpd-tools.x86_64 0:2.4.6-80.el7.centos.1   mailcap.noarch 0:2.1.41-2.el7

Complete!
[root@localhost ~]#
```

4. Allow Apache through the firewall

```
firewall-cmd --permanent --add-port=80/tcp
firewall-cmd --permanent --add-port=443/tcp
```

The image shows a terminal window where the `firewall-cmd` command is run twice, once for port 80 and once for port 443, both resulting in a "success" message.

```
[root@localhost ~]# firewall-cmd --permanent --add-port=80/tcp
success
[root@localhost ~]# firewall-cmd --permanent --add-port=443/tcp
success
[root@localhost ~]#
```

Reload the firewall

```
firewall-cmd --reload
```

The image shows a terminal window where the `firewall-cmd --reload` command is run, resulting in a "success" message.

```
[root@localhost ~]# firewall-cmd --reload
success
[root@localhost ~]#
```

5. Add HTTP and HTTPS to the public zone and reload the firewall

```
firewall-cmd --permanent --zone=public --add-service=http  
firewall-cmd --permanent --zone=public --add-service=https  
firewall-cmd --reload
```

A terminal window titled "root@localhost:~". The window contains the following command history:

```
root@localhost:~# firewall-cmd --permanent --zone=public --add-service=http  
success  
root@localhost:~# firewall-cmd --permanent --zone=public --add-service=https  
success  
root@localhost:~# firewall-cmd --reload  
success  
root@localhost:~# firewall-cmd --zone=public --list-services  
ssh dhcpcv6-client http https  
root@localhost:~#
```

The command "firewall-cmd --reload" is highlighted with a yellow box, and the output "success" is highlighted with a red box. The service names "http" and "https" in the final command are also highlighted with red boxes.

6. Start apache

```
systemctl start httpd.service
```

7. Check that it is running

```
systemctl status httpd.service
```

A terminal window titled "root@localhost:~". The window contains the following command history:

```
root@localhost:~# systemctl start httpd.service  
root@localhost:~# systemctl status httpd.service  
● httpd.service - The Apache HTTP Server  
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor prese  
t: disabled)  
  Active: active (running) since Sun 2018-08-05 04:50:51 EDT; 17s ago  
    Docs: man:httpd(8)  
          man:apachectl(8)  
  Main PID: 23155 (httpd)  
    Status: "Total requests: 0; Current requests/sec: 0; Current traffic: 0 B/s  
ec"  
  Tasks: 6  
  CGroup: /system.slice/httpd.service  
          └─23155 /usr/sbin/httpd -DFOREGROUND  
              ├─23156 /usr/sbin/httpd -DFOREGROUND  
              ├─23157 /usr/sbin/httpd -DFOREGROUND  
              ├─23158 /usr/sbin/httpd -DFOREGROUND
```

The command "systemctl status httpd.service" is highlighted with a yellow box, and the status line "Active: active (running)" is highlighted with a red box. A yellow circle labeled "6" is positioned over the status line, and a yellow circle labeled "7" is positioned over the "Tasks: 6" line.

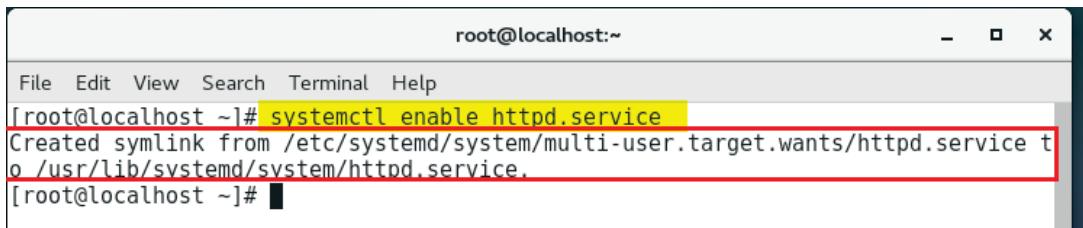
8. Configure Apache to start on Boot

```
systemctl enable httpd.service
```

It creates a symlink:

From: /etc/system/system/multi-user.target.wants/httpd.service

To: /usr/lib/system/system/httpd.service

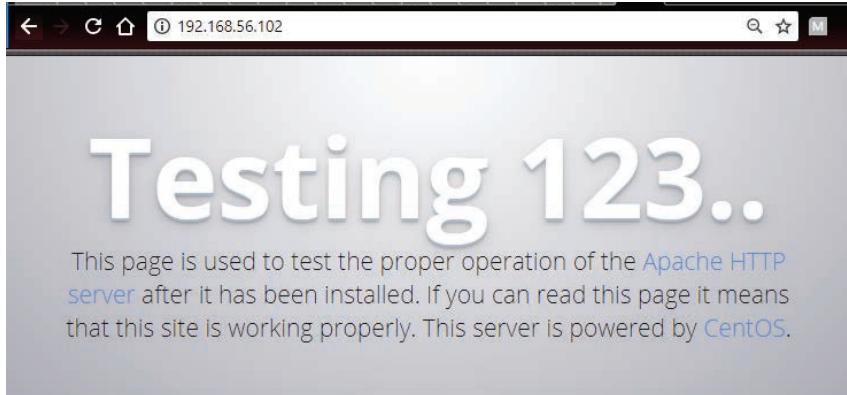


```
root@localhost:~ - □ ×
File Edit View Search Terminal Help
[root@localhost ~]# systemctl enable httpd.service
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[root@localhost ~]#
```

9. Do a spot check. On your host computer go to a browser and type in your server IP address in the URL

```
http://192.168.56.102
```

You should see the Apache testing page.



Installing MariaDB

1. Install MariaDB

```
yum install mariadb-server
```

Type in “**Y**” to confirm installation when prompted.

Look for a “Complete!” confirmation message at the end.

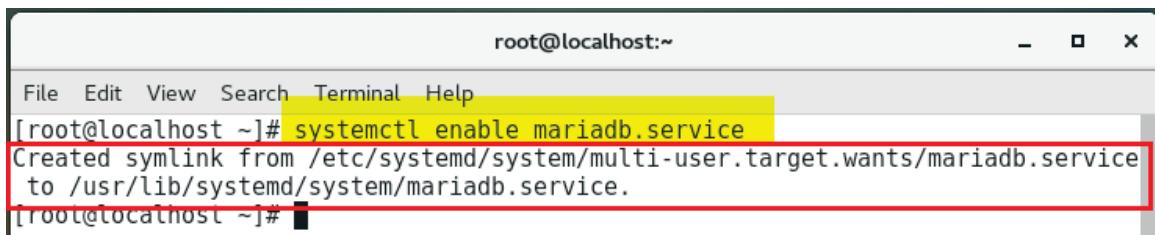
```
Installed:  
mariadb-server.x86_64 1:5.5.56-2.el7  
  
Dependency Installed:  
mariadb.x86_64 1:5.5.56-2.el7 perl-DBD-MySQL.x86_64 0:4.023-6.el7  
  
Complete!  
[root@localhost ~]#
```

2. Enable MariaDB to start on Boot

```
systemctl enable mariadb.service
```

This creates a symlink:

From: /etc/systemd/system/multi-user.wants/mariadb.service
To: /usr/lib/systemd/system/mariadb.service



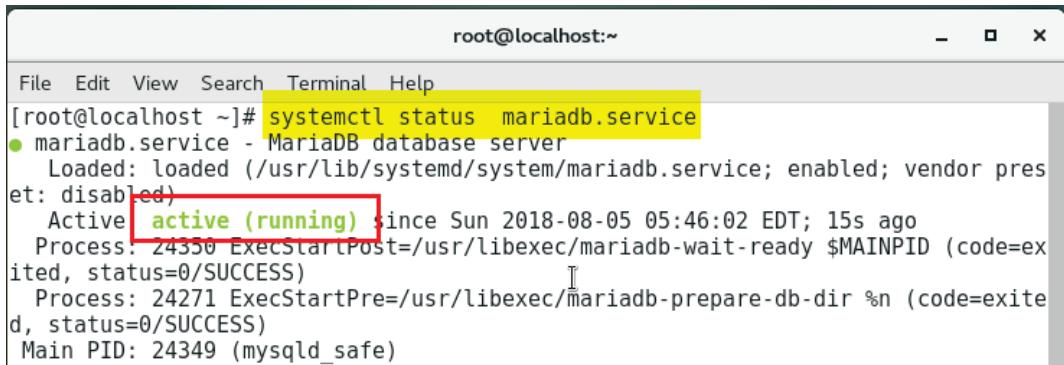
The screenshot shows a terminal window with the title bar "root@localhost:~". The window contains a menu bar with File, Edit, View, Search, Terminal, and Help. Below the menu is a command line interface. The user has run the command [root@localhost ~]# systemctl enable mariadb.service. The terminal then displays the output: "Created symlink from /etc/systemd/system/multi-user.target.wants/mariadb.service to /usr/lib/systemd/system/mariadb.service.". The entire output line is highlighted with a red box.

3. Start MariaDB

```
systemctl start mariadb.service
```

4. Check its status

```
systemctl status mariadb.service
```



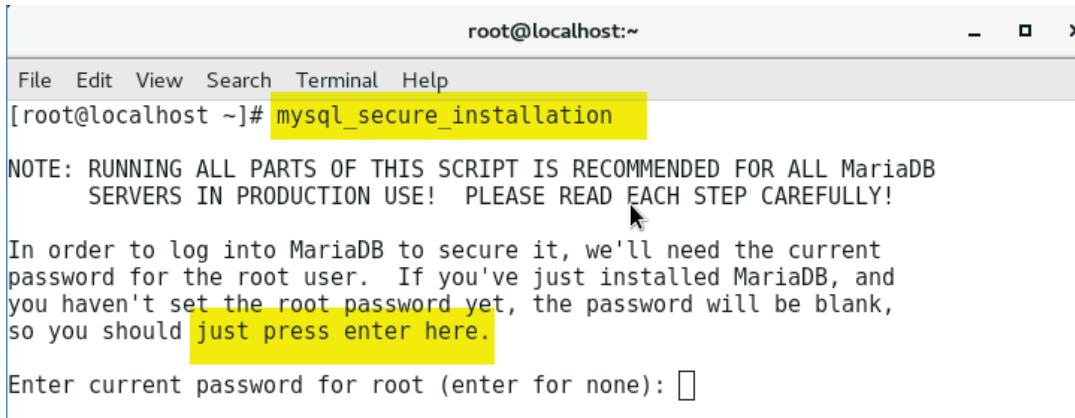
```
root@localhost:~  
File Edit View Search Terminal Help  
[root@localhost ~]# systemctl status mariadb.service  
● mariadb.service - MariaDB database server  
  Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; vendor pres-  
  et: disabled)  
  Active: active (running) since Sun 2018-08-05 05:46:02 EDT; 15s ago  
    Process: 24350 ExecStartPost=/usr/libexec/mariadb-wait-ready $MAINPID (code=ex-  
    ited, status=0/SUCCESS)  
    Process: 24271 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir %n (code=exite-  
d, status=0/SUCCESS)  
    Main PID: 24349 (mysqld_safe)
```

5. Address security concerns:

Assign root password, remove anonymous user accounts, disable root logins outside the localhost, remove test databases, and reload privilege tables. Below are our recommendations.

```
mysql_secure_installation
```

After running the command, you will first press 'Enter', since you have not set the root password yet.



```
root@localhost:~  
File Edit View Search Terminal Help  
[root@localhost ~]# mysql_secure_installation  
  
NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB  
SERVING IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!  
  
In order to log into MariaDB to secure it, we'll need the current  
password for the root user. If you've just installed MariaDB, and  
you haven't set the root password yet, the password will be blank,  
so you should just press enter here.  
  
Enter current password for root (enter for none): 
```

a. Assign a password to root user: Y

Give a password and re-enter password

```
Set root password? [Y/n] Y  
New password:   
Re-enter new password:   
Password updated successfully!  
Reloading privilege tables..  
... Success!
```

b. Remove anonymous user account: Y

By default, a MariaDB installation has an anonymous user, allowing anyone to log into MariaDB without having to have a user account created for them. This is intended only for testing, and to make the installation go a bit smoother. You should remove them before moving into a production environment.

```
Remove anonymous users? [Y/n] Y  
... Success!
```

c. Disable root login outside the localhost: Y

Normally, root should only be allowed to connect from 'localhost'. This ensures that someone cannot guess at the root password from the network.

```
Disallow root login remotely? [Y/n] Y  
... Success!
```

d. Remove test database: n

By default, MariaDB comes with a database named 'test' that anyone can access. This is also intended only for testing, and should be removed before moving into a production environment.

```
Remove test database and access to it? [Y/n] n  
... skipping.
```

e. Reload privilege tables

Reloading the privilege tables will ensure that all changes made so far will take effect immediately.

```
Reload privilege tables now? [Y/n] Y  
... Success!
```

Once the installation is complete, you will see:

```
All done! If you've completed all of the above steps, your MariaDB  
installation should now be secure.
```

```
Thanks for using MariaDB!  
[root@localhost ~]#
```

Installing PHP

1. IUS repo is required for php 5.6

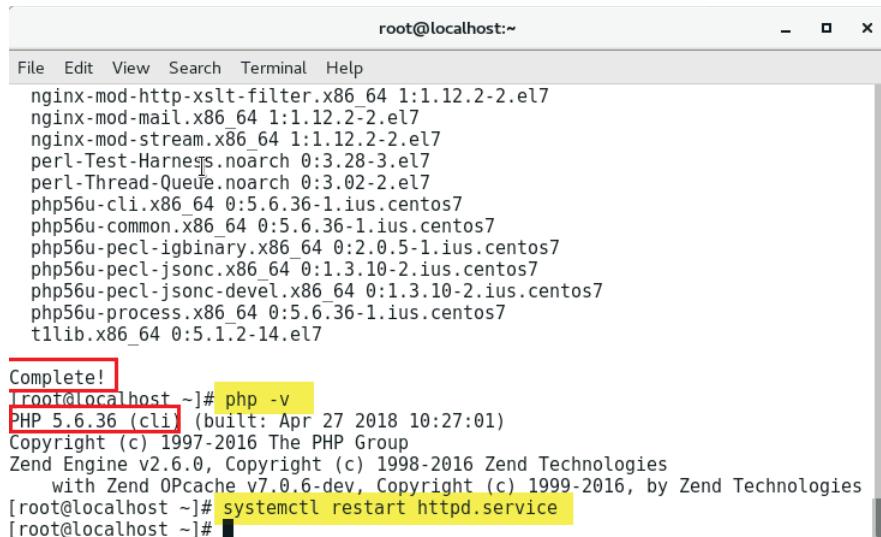
```
wget https://centos7.iuscommunity.org/ius-release.rpm && sudo rpm -Uvh ius-release.rpm
```

2. Install the PHP 5.6 interpreter and PHP MySQL and other extensions

```
yum install nginx php56u php56u-devel php56u-fpm php56u-gd php56u-mbstring php56u-mcrypt php56u-mysql php56u-pdo php56u-opcache php56u-pear php56u-xml php56u-xmlrpc php56u-memcached
```

When prompted, type '**y**' to confirm installation.

Look for a "Complete!" confirmation message at the end.



```
root@localhost:~  
File Edit View Search Terminal Help  
nginx-mod-http-xslt-filter.x86_64 1:1.12.2-2.el7  
nginx-mod-mail.x86_64 1:1.12.2-2.el7  
nginx-mod-stream.x86_64 1:1.12.2-2.el7  
perl-Test-Harness.noarch 0:3.28-3.el7  
perl-Thread-Queue.noarch 0:3.02-2.el7  
php56u-cli.x86_64 0:5.6.36-1.ius.centos7  
php56u-common.x86_64 0:5.6.36-1.ius.centos7  
php56u-pecl-igbinary.x86_64 0:2.0.5-1.ius.centos7  
php56u-pecl-jsonc.x86_64 0:1.3.10-2.ius.centos7  
php56u-pecl-jsonc-devel.x86_64 0:1.3.10-2.ius.centos7  
php56u-process.x86_64 0:5.6.36-1.ius.centos7  
t1lib.x86_64 0:5.1.2-14.el7  
  
Complete!  
[root@localhost ~]# php -v  
PHP 5.6.36 (cli) (built: Apr 27 2018 10:27:01)  
Copyright (c) 1997-2016 The PHP Group  
Zend Engine v2.6.0, Copyright (c) 1998-2016 Zend Technologies  
    with Zend OPcache v7.0.6-dev, Copyright (c) 1999-2016, by Zend Technologies  
[root@localhost ~]# systemctl restart httpd.service  
[root@localhost ~]#
```

3. Confirm php version

```
php -v
```

4. Re-start the Apache server to make it will now load PHP module.

```
systemctl restart httpd.service
```

5. Check that PHP and Apache are talking to each other by creating a file inside /var/www/html/ directory.

- Navigate to the directory and create a php test file

```
gedit /var/www/html/info.php
```

- Type in

```
<?php phpinfo(); ?>
```

- Click on 'Save'



- Grant permission

```
chmod 755 /var/www/html/info.php
```

- Go to your host computer, open a browser and type in <http://<your network IP address>/info.php>.

```
http://192.168.56.102/info.php
```

You should see the php information page:

A screenshot of a web browser window. The address bar shows the URL "192.168.56.102/info.php". The page content starts with "PHP Version 5.6.36" and includes the PHP logo. Below this is a table of PHP configuration details:

System	Linux localhost.localdomain 3.10.0-862.9.1.el7.x86_64 #1 SMP Mon Jul 16 16:29:36 UTC 2018 x86_64
Build Date	Apr 27 2018 10:28:05
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc
Loaded Configuration File	/etc/php.ini
Scan this dir for additional .ini files	/etc/php.d

Install MediaWiki

1. Log into the Linux computer. For the purpose of these instructions we have created a virtual machine with CentOS 7 operating system. So, if you are following the previous instructions, and if you have not done so already, start the virtual machine and log in as root user. See instructions above on how to do so.
2. Open your terminal.
3. Check that Apache is installed and running.

```
systemctl status httpd.service
```

```
root@localhost:~# systemctl status httpd.service
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
   Active: active (running) since Sun 2018-08-05 16:16:26 EDT; 25min ago
     Docs: man:httd(8)
           man:apachectl(8)
   Main PID: 1148 (httpd)
```

4. Check that MariaDB is installed and running.

```
systemctl status mariadb.service
```

```
root@localhost:~# systemctl status mariadb.service
● mariadb.service - MariaDB database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; vendor preset: disabled)
   Active: active (running) since Sun 2018-08-05 16:16:30 EDT; 27min ago
     Process: 1252 ExecStartPost=/usr/libexec/mariadb-wait-ready $MAINPID (code=exited, status=0/SUCCESS)
     Process: 1119 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir %n (code=exited, status=0/SUCCESS)
   Main PID: 1251 (mysqld_safe)
```

5. Check that php is installed

```
php -v
```

```
[root@localhost ~]# php -v
PHP 5.6.36 (cli) (built: Apr 27 2018 10:27:01)
Copyright (c) 1997-2016 The PHP Group
Zend Engine v2.6.0, Copyright (c) 1998-2016 Zend Technologies
    with Zend OPcache v7.0.6-dev, Copyright (c) 1999-2016, by Zend Technologies
```

6. Log into mysql using root user and the given password

```
mysql -u root -p
```

```
File Edit View Search Terminal Help
[root@localhost ~]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 2
Server version: 5.5.56-MariaDB MariaDB Server

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> 
```

7. Create a database for the media wiki

```
create database my_wiki;
```

Being my_wiki the given database name

Look for a “OK” confirmation message

```
MariaDB [(none)]> create database my_wiki;
Query OK, 1 row affected (0.00 sec)
MariaDB [(none)]> 
```

8. Create a database user and grant permission giving all privileges to my_wiki database

```
GRANT ALL PRIVILEGES ON my_wiki.* to 'laura'@'localhost' IDENTIFIED BY
'kd(9Usz5' WITH GRANT OPTION;
```

```
MariaDB [(none)]> GRANT ALL PRIVILEGES ON my_wiki.* to 'laura'@'localhost' IDENTIFIED BY
'lapfama' WITH GRANT OPTION;
Query OK, 0 rows affected (0.01 sec)
MariaDB [(none)]> 
```

9. Install “wget” – it might have been already installed; if so, you will see a message saying that it is already installed.

```
yum install wget
```

```
| Package wget-1.14-15.el7_4.1.x86_64 already installed and latest version  
| Nothing to do
```

10. Download MediaWiki

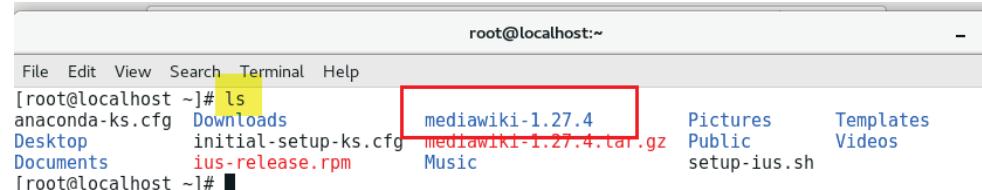
```
wget https://releases.wikimedia.org/mediawiki/1.27/mediawiki-  
1.27.4.tar.gz
```

```
[root@localhost ~]# wget https://releases.wikimedia.org/mediawiki/1.27/mediawiki-1.27.4.tar.gz  
--2018-08-05 18:48:26-- https://releases.wikimedia.org/mediawiki/1.27/mediawiki-1.27.4.tar.gz  
Resolving releases.wikimedia.org (releases.wikimedia.org)... 208.80.154.251, 2620:0:861:ed1a::3:d  
Connecting to releases.wikimedia.org (releases.wikimedia.org)|208.80.154.251|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 31813391 (30M) [application/x-gzip]  
Saving to: ‘mediawiki-1.27.4.tar.gz’  
  
100%[=====] 31,813,391 9.51MB/s in 3.2s  
2018-08-05 18:48:29 (9.51 MB/s) - ‘mediawiki-1.27.4.tar.gz’ saved [31813391/31813391]  
[root@localhost ~]#
```

11. Since it is a ‘tar’ file we need to extract it.

```
tar -xvf mediawiki-1.27.4.tar.gz
```

- a. To confirm that it has been extracted; type in: `ls`



12. Copy directory to the directory inside /var/www/html/media >> we are creating the 'media' folder

```
cp -r mediawiki-1.27.4 /var/www/html/MediaWiki
```

Navigate to the destination folder and list content to confirm success.

```
cd /var/www/html/MediaWiki/  
ls
```

```
root@localhost:~  
File Edit View Search Terminal Help  
[root@localhost ~]# cp -r mediawiki-1.27.4 /var/www/html/MediaWiki  
[root@localhost ~]# cd /var/www/html/MediaWiki/  
[root@localhost MediaWiki]# ls  
api.php images Rakefile  
autoload.php img_auth.php README  
cache includes RELEASE-NOTES-1.27  
composer.json index.php resources  
composer.local.json-sample INSTALL serialized  
COPYING jsduck.json skins  
CREDITS languages StartProfiler.sample  
docs load.php tests  
extensions maintenance thumb_handler.php  
FAQ mw-config thumb.php  
Gemfile.lock opensearch_desc.php UPGRADE  
Gruntfile.js phpcs.xml vendor  
HISTORY profileinfo.php wiki.phtml
```

13. Change ownership and permissions for the 'media' directory.

First, navigate back to the home directory, then change ownership; finally, change permissions.

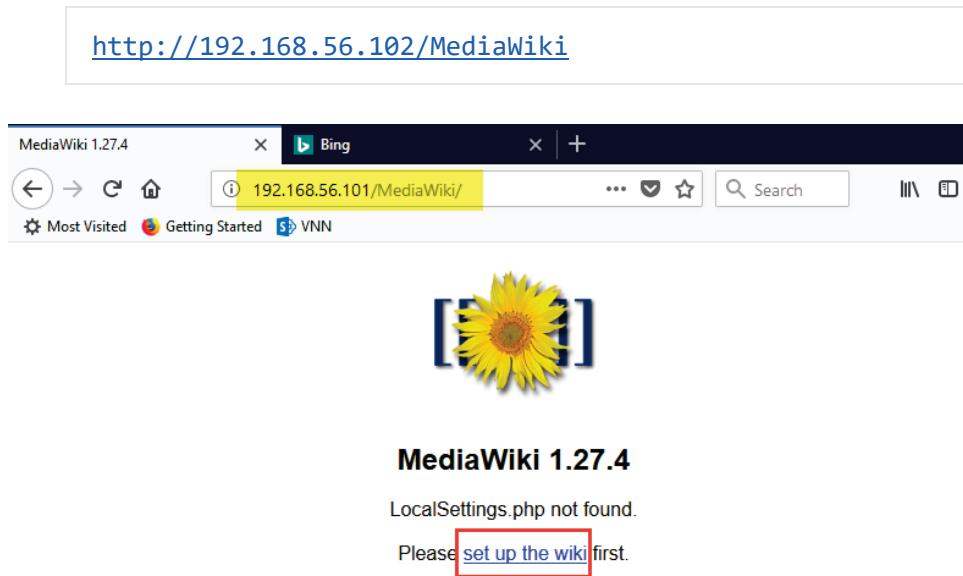
```
cd ~  
chown -R apache:apache /var/www/html/MediaWiki/
```

```
chmod 755 /var/www/html/MediaWiki/
```

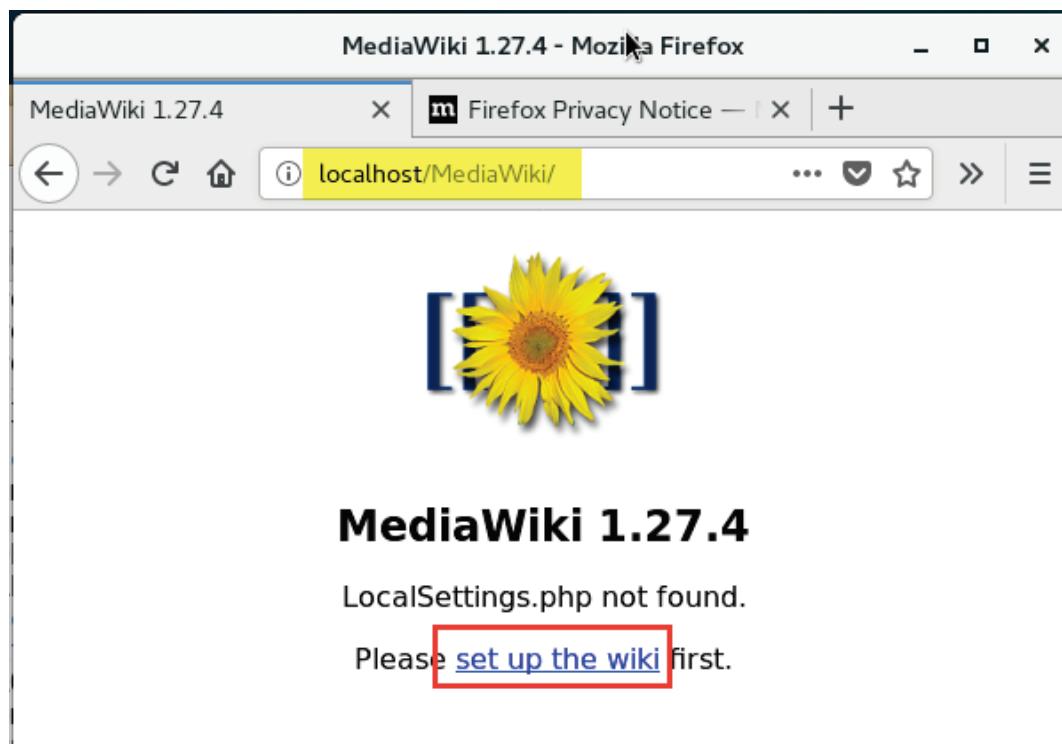
```
root@localhost:~  
File Edit View Search Terminal Help  
[root@localhost MediaWiki]# cd ~  
[root@localhost ~]# chown -R apache:apache /var/www/html/MediaWiki/  
[root@localhost ~]# chmod 755 /var/www/html/MediaWiki/
```

14. Check that everything went well.

Open the browser and navigate to [http://\[your-ip-address\]/MediaWiki](http://[your-ip-address]/MediaWiki)



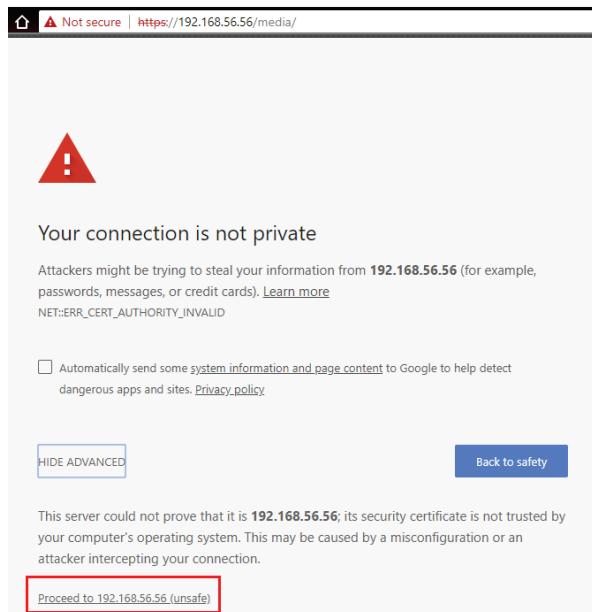
Since we will be download a file once the configuration is over, for simplicity it is easier if you access the MediaWiki url using the virtual machine's browser:



Click on the “set up the wiki” link.

This will take you to the <http://localhost:8080/mw-config/index.php> page. If you are doing this in the host computer use the IP address instead of 'localhost:8080'. Though it is recommended to do it in the virtualbox

Note: If you see a warning sign that the connection is not private, click on 'Advance' and then on 'Proceed to 192.168.56.56 (unsafe)'



15. Click on “Continue →” or change your language if desired.

MediaWiki 1.27.4 installation

Language

Your language:
en - English

Wiki language:
en - English

15 Continue →

► Language
• Existing wiki
• Welcome to MediaWiki!
• Connect to database
• Upgrade existing installation
• Database settings
• Name
• Options
• Install
• Complete!
• Restart installation

16. Scroll down to the bottom of the page and click on “Continue →.”

This program is distributed in the hope that it will be useful, but **without any warranty**, without even the implied warranty of **merchantability** or **fitness for a particular purpose**. See the GNU General Public License for more details.

You should have received [a copy of the GNU General Public License](#) along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA, or read it online [online](#).

16 Continue →

17. Leave “Database type:” as “MySQL (or compatible)” as the “or compatible” references MariaDB.
Leave all other information as is,
18. Type in a “Database password:” and
19. Click on “Continue →.” You can use the same password as your MariaDB install if desired.

User account for installation

Database username:
17 root

Database password:
18 *****

19 Back Continue →

20. Leave “Storage engine:” as InnoDB and
21. change “Database character set:” to UTF-8 as these settings mimic what is installed with the Meza install.
22. Click on “Continue →.”

Database settings

Database account for web access

Use the same account as for installation

Storage engine:

20 InnoDB MyISAM

21 UTF-8 Binary

Database character set:

22

- Language
- Existing wiki
- Welcome to MediaWiki!
- Connect to database
- Upgrade existing installation
- Database settings
- Name
- Options
- Install
- Complete!
- Restart installation

23. Give your Wiki a name such as “My Wiki,”

Name

Name of wiki:

23

- Language
- Existing wiki
- Welcome to MediaWiki!
- Connect to database
- Upgrade existing installation

24. Type in a username and
25. Type in a password. You can use the same password as your MariaDB install if desired.
26. Confirm password.
27. Leave all other settings as is (including “Email address:”)
28. Click on “Continue →” at the bottom of the page.

Your username:

24

Password:

25

Password again:

26

Email address:

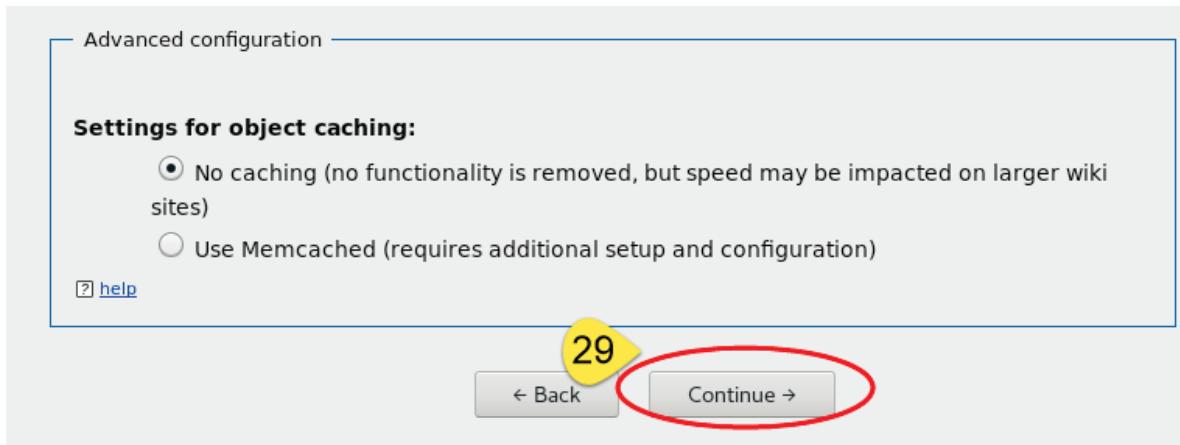
27
[?] help
 Subscribe to the release announcements mailing list [?]

You are almost done! You can now skip the remaining configuration and install the wiki right now.

28 Ask me more questions.
 I'm bored already, just install the wiki

← Back

29. Leave all settings as is and scroll down to the bottom of the page and click on “Continue →.” Some extensions may be enabled from here for future use, but for now at the time of this writing, no extensions are needed.



30. Click on “Continue →.”

MediaWiki 1.27.4 installation



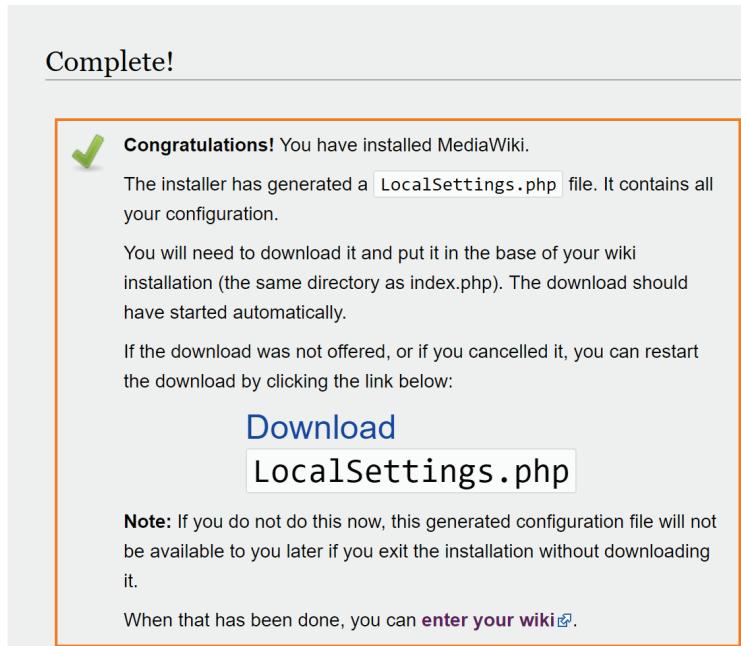
31. Click on “Continue →.”



32. A dialogue will appear with an option to open or save a LocalSettings.php file. **Save this file in the MediaWiki folder** at the root level or save it somewhere else first and move it to the MediaWiki folder thereafter.

33. A confirmation message will be displayed confirming the success of the installation.

MediaWiki 1.27.4 installation



Note: If you missed to download the “LocalSettings.php” file on the previous step, you may click on the link “Download” and save it. This will be your last chance of doing so.

34. Access in your browser: <http://localhost:8080> and login using the username and password you created during installation to confirm that the MediaWiki installation was successful.

35. If successful, log out; if not, review the steps described above and try again.

NASA EVA Gamification Extension Installation Instructions

These steps may need to be altered, if the GitHub repository is different than what the Summer 2018 semester used.

The following instructions are all commands to be run from the terminal.

1. Make sure the “LocalSettings.php” file that you save on the previous section is placed at the root level of the “MediaWiki” folder.

```
cp -r Downloads/LocalSettings.php /var/www/html/MediaWiki/
```

2. Download and extract the files and folders from [GitHub]
(https://github.com/SWEN670NASAeva2/NASA_EVA_Gamification)

```
Unzip NASA_EVA_Gamification-master.zip
```

3. Copy the entire `NASA_EVA_Gamification-master` directory to the `MediaWiki/extensions/NASA_WIKI_Gamification` directory. Pay attention that when we create the new directory inside the Mediawiki/extensions, we are dropping the “-master” part of the name.

```
cp -r Downloads/NASA_EVA_Gamification-master  
/var/www/html/MediaWiki/extensions/NASA_EVA_Gamification
```

4. Navigate to the “MediaWiki” directory and open the ‘LocalSettings.php’ file so you can edit it:

```
gedit /var/www/html/MediaWiki/LocalSettings.php
```

- a) Change the default “MediaWiki” logo:

Find **\$wgLogo**. and replace everything after the '=' sign with the following:

```
"$wgResourcebasePath/extensions/NASA_EVA_Gamification/images/nasa-wiki-  
logo.png";
```

The line should look like:

```
$wgLogo =  
"$wgResourcebasePath/extensions/NASA_EVA_Gamification/images/nasa-wiki-  
logo.png";
```

b) Add global variables

Scroll down to the bottom of the page (after the last line) and paste the following lines:

```
# Nasa Eva Gamification >> Phase 1

wfLoadExtension('NASA_EVA_Gamification');
$wgShowDebug = true;
$wgDebugComments = true;
$wgEnableParserCache = false;
$wgCachePages = false;

# Nasa Eva Gamification >> Phase 2

$wgPhase2Images =
"$wgResourcebasePath/extensions/NASA_EVA_Gamification/images/";
$wgProfilePage=$wgServer.$wgResourcebasePath."/index.php/Special:UserGam
ificationProfile";
$wgBadges=array('platinum'=>'500','gold'=>'200','silver'=>'100','bronze'
=>'50');
$wgPoints = array(0=>50, 1=>100);
$wgLeaderBoardPointScale=100;
```

c) Save the file.

Note: `$wgShowDebug = true;` is for debugging purposes; so, it is recommended to have it set to “true” in a development environment and set to “true” in a production environment.

5. Update changes

a) Navigate to the MediaWiki directory and run the following command:

```
cd /var/www/html/MediaWiki/
php maintenance/update.php
```

6. Move and replace the following files “From” the specified directory “To” the specified directory.

Navigate to the “extensions/NASA_EVA_Gamification” directory

```
cd extensions/NASA_EVA_Gamification
```

a) Move file: `WikiPage.php`

From directory: `MediaWiki /extensions/NASA_EVA_Gamification/`

To directory: `MediaWiki /includes/page/`

```
mv -f WikiPage.php /var/www/html/MediaWiki/includes/page/
```

b) Move file: Revision.php

From directory: ` MediaWiki /extensions/NASA_EVA_Gamification/`

To directory: ` MediaWiki /includes/`

```
mv -f Revision.php /var/www/html/MediaWiki/includes/
```

7. Open a web browser and access your local instance: <http://localhost:80/MediaWiki/> or from the host computer: <http://<IP Address>/MediaWiki/> In our case: <http://192.168.56.102/MediaWiki/>

- a) Click "Log in" on the upper right corner link.
- b) Use the username and password that you created when installing the Wikimedia or create a new user.
- c) From the left hand-side navigation select 'Special pages'
- d) Scroll down (almost until the end of the page) and verify that under the 'Other Special pages' section the "User Gamification Profile" extension has been successfully installed.
- e) Click on 'User Gamification Profile' to confirm that the extension was install successfully.
Please note that since you have not added or edited any page, you will see just your username and name (if you have it defined) with a message stating:
No data found!

User Gamification Profile

Username: Laura

Name: [Not Populated]

No data found!

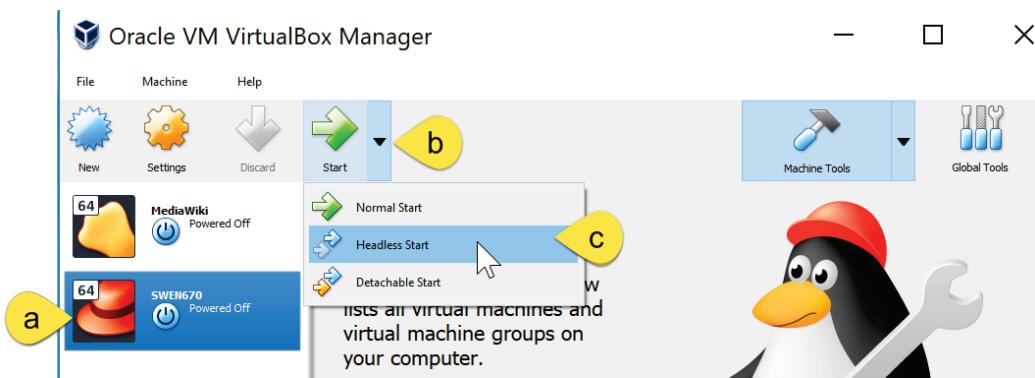
8. You are Done!!

Note

This extension was designed for MediaWiki 1.27 or later.

Additional Tips

1. After installing CentOS, consider the documentation at <https://wiki.centos.org/HowTos/Network/SecuringSSH> to secure shell access to the VM.
2. With shell access configured correctly, the system can be connected to via the ssh port, instead of the console. As such, the VM can be started in Headless Mode, via the down arrow next to the green Start button in the VirtualBox Manager screen.
 - a. Select your virtual machine
 - b. Click on the arrow next to the 'Start' button
 - c. Select 'Headless Start'



This will start the VM, but without a console, to free up the host's screen. Once the VM is started in Headless Mode, the VirtualBox Manager window can be closed without effecting any VMs running.

3. gedit comes pre-installed with the ISO-DVD installation. It is a great tool to edit using a user interface editor.
4. If it's forgotten, displaying the contents of `/var/www/html/MediaWiki/LocalSettings.php`; it will show the database username and password, which can be used for direct mysql access..

Earning Points

By Creating a Page

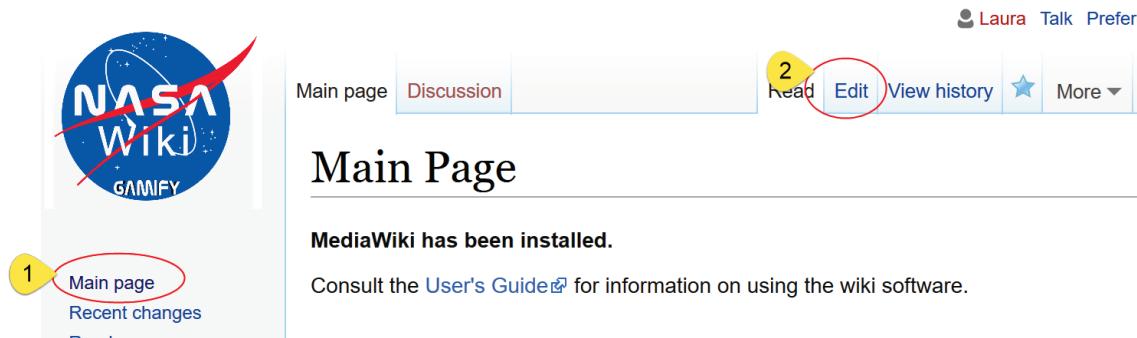
- 1) Click on “Talk” on the upper right navigation.
- 2) Click on “Create”



- 3) Type in your text, scroll down, and click on “Save page”.

By Editing a Page

- 1) Click on “Main page” on the left-hand side navigation or navigate to the page you want to edit.
- 2) Click on “Edit”



- 3) Edit/Add the content of the page, scroll down, and click on “Save page”.

Checking Your Points and Badges Earned

Visit the “User Gamification Profile” to see points being added and badges being earned as you add and edit posts.

1. Click on “Special pages”
2. Scroll down
3. Under “Other special pages” click on “User Gamification Profile”
4. See the dashboard being displayed.

Other special pages

3 • User Gamification Profile

4

User Gamification Profile

Username: Laura

Name: Laura

Username	Added Post	Edited Post	Points	Badges
Laura	1	4	300	
Laura 2	1	3	250	



Main page
Recent changes
Random page
Help

Tools

What links here
1 Special pages
Printable version
Page information

Appendix A - Enabling Virtualization

Please note that you will have to re-start your system, so save and close any open windows/applications.

1. Re-start your system.
2. Depending on the brand you have, the hot key you will have to use to enter the BIOS on re-start.
For example, for Lenovo computers, you will see a message that reads something like this,

To interrupt normal startup, press Enter or tap here.

3. Once you interrupted the normal startup, select the F key that will enter the BIOS Setup Utility.
For example, for Lenovo computers is:
F1 to enter the BIOS Setup Utility
4. Moving with your ‘right’ and ‘left’ arrows select the “Security” tab.
5. Moving with your ‘up’ and ‘down’ arrows select ‘Virtualization’.
6. Press ‘Enter’ to select
7. Moving with your ‘up’ and ‘down’ arrows select ‘Enabled’
8. Press F10 to save changes and exit.
9. Select ‘Yes’ to confirm.

[Click here to continue with the CentOS installation instructions.](#)