

# Getting familiar with virtual machine and Linux operating system

## 1. Goal and Deliverable

Getting familiar with virtual machine and Linux operating system.

At the end, you need to submit the screenshot of Linux commands you tried to the D2L Dropbox.

## 2. What is Virtual Machine and Linux?

Virtual machines allow you to run an operating system in an app window on your desktop that behaves like a full, separate computer. You can use them play around with different operating systems, run software your main operating system can't, and try out apps in a safe, sandboxed environment.

Just like Windows 8 and Mac OS X, Linux is an operating system. An operating system is software that manages all of the hardware resources associated with your electronic devices. It manages the communication between your software and hardware. Without the operating system (OS), the software wouldn't function.

## 3. Installation

### 3.1 Virtual Box

I assume that you don't have a spare computer to install just Linux. So, what we will do is to install Linux in a virtual machine. The Virtual Machine we will use for this lab is Oracle VirtualBox. VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use.

Please **download** free VirtualBox from: [https://www.virtualbox.org/wiki/Download\\_Old\\_Builds\\_6\\_0](https://www.virtualbox.org/wiki/Download_Old_Builds_6_0).

Although newer version is available, Version 6.0.4 is recommended for the lab. Please choose the correct link for your current operating system.

- **VirtualBox 6.0.4** (released January 28 2019)
  - [Windows hosts](#)
  - [OS X hosts](#)
  - [Solaris hosts](#)
  - Linux Hosts:
    - [Ubuntu 18.04 / 18.10 / 19.04 / Debian 10](#)
    - [Ubuntu 16.04](#)
    - [Ubuntu 14.04 / 14.10 / 15.04](#)
    - [Debian 9](#)
    - [Debian 8](#)
    - [openSUSE 15.0](#)
    - [openSUSE 13.2 / Leap 42](#)
    - [Fedora 29 / 30](#)
    - [Fedora 26 / 27 / 28](#)
    - [Oracle Linux 7 / Red Hat Enterprise Linux 7 / CentOS 7](#)
    - [Oracle Linux 6 / Red Hat Enterprise Linux 6 / CentOS 6](#)
    - [All distributions](#)
  - [Extension Pack](#)
  - [Sources](#)
  - [MD5 checksums, SHA256 checksums](#)

Then, follow the instruction to **install** VirtualBox on your machine.

### 3.2 Ubuntu

We will try some of the security labs that provided from SEED Security Labs in the future, therefore, we will install SEED Ubuntu 16.04 here.

Please go to this webpage: [https://seedsecuritylabs.org/lab\\_env.html](https://seedsecuritylabs.org/lab_env.html)

We will use the (New) SEEDUbuntu16.04.zip, which was built in June 2019.

- **(New) SEEDUbuntu16.04.zip:** This VM was built in June 2019. We have made some small changes based on the 2018-May version.
  - Download the image from one of the following servers:
    - Google Drive (fast): [SEEDUbuntu-16.04-32bit.zip](#)
    - Backup Server (slow): [SEEDUbuntu-16.04-32bit.zip](#)
    - A server at Zhejiang University: TBA
    - MD5 value: 12c48542c29c233580a23589b72b71b8
  - Unzip SEEDUbuntu-16.04-32bit.zip and you should be able to see a folder that contains the VM files.
    - Follow [this document](#) to run and configure the VM on VirtualBox.
    - You will be logged into an account called **seed**, and its password is **dees** (the reverse order of seed).

Please download the image from either Google drive or backup server, then unzip SEEDUbuntu-16.04-32bit.zip to a proper folder. Then you should be able to see a folder that contains the VM files.

## 4. Run SEED VM on VirtualBox

### 4.1 The account information

You will primarily use the following account:

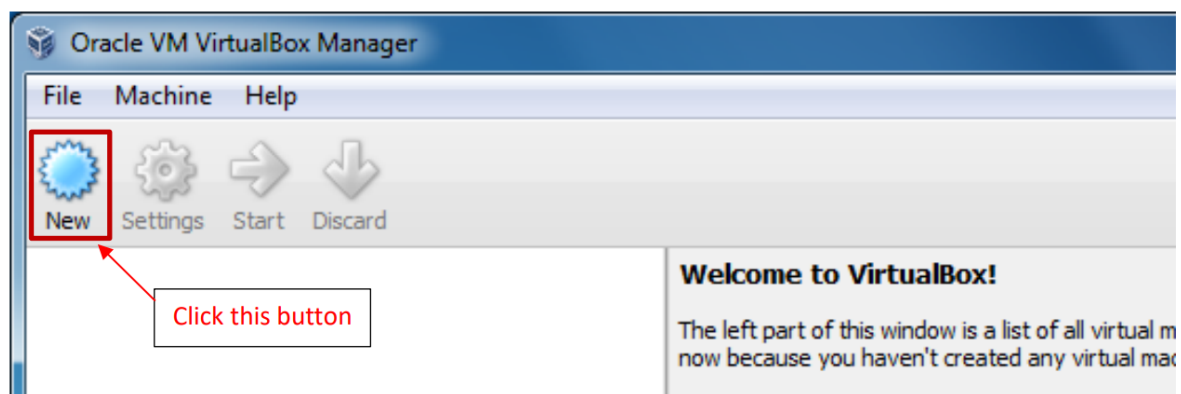
- User ID: seed
- Password: dees

When you want to log into the root account (root is the user name or account that by default has access to all commands and files on a Linux or other Unix-like operating system. It is also referred to as the root account, root user and the superuser.):

- User ID: root
- Password: seedubuntu

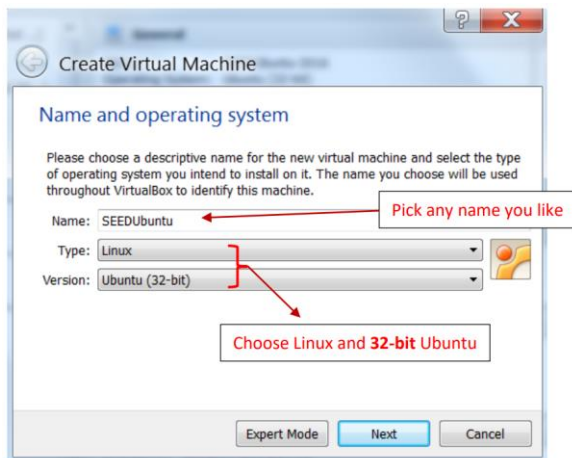
### 4.2 Getting Started with VM in VirtualBox

Step 1: Create a New VM in VirtualBox

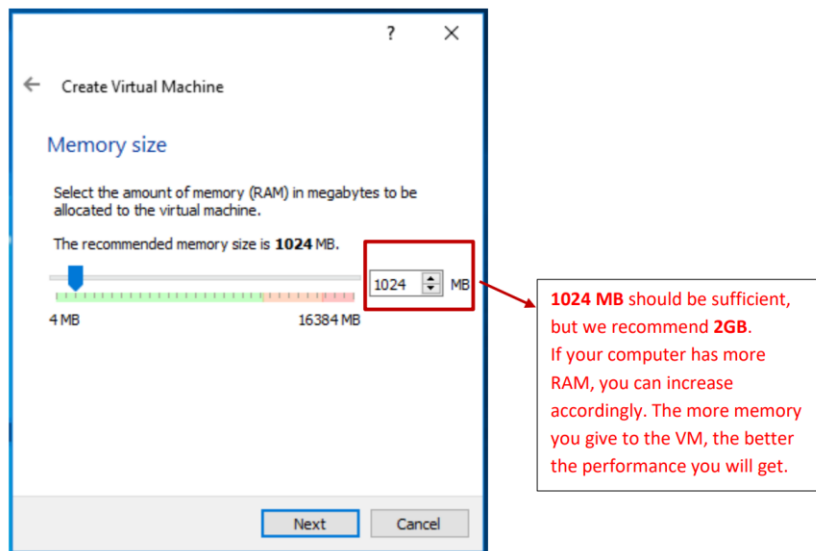


## Step 2: Provide a Name and Select the OS Type and Version

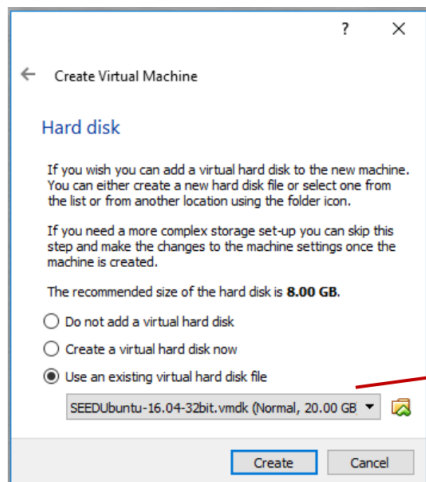
DO NOT pick Ubuntu (64-bit), even though your machine is 64 bit. The prebuilt VM is 32-bit Ubuntu



## Step 3: Set the Memory Size

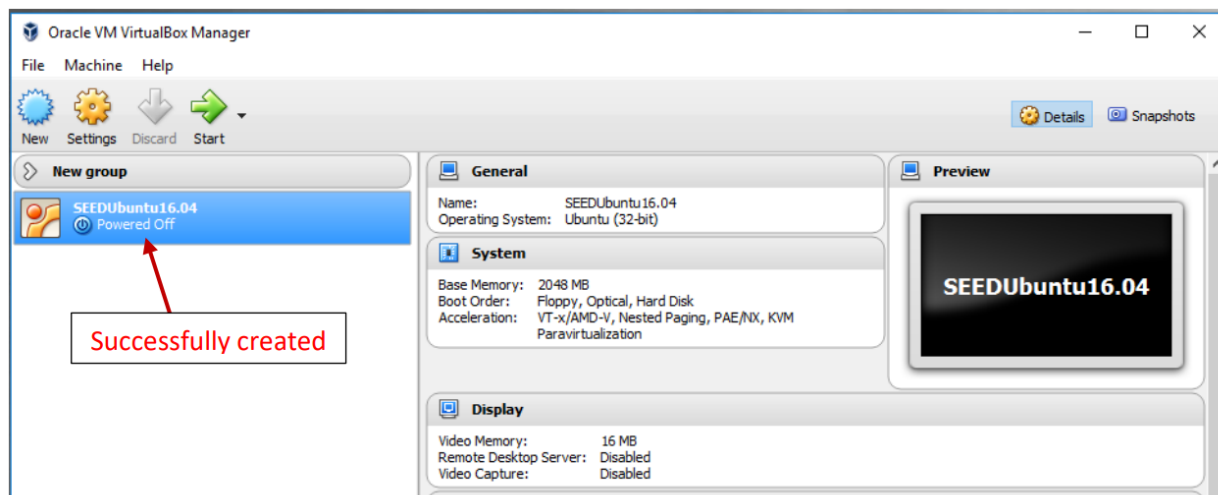


## Step 4: Select the Pre-built VM File downloaded before

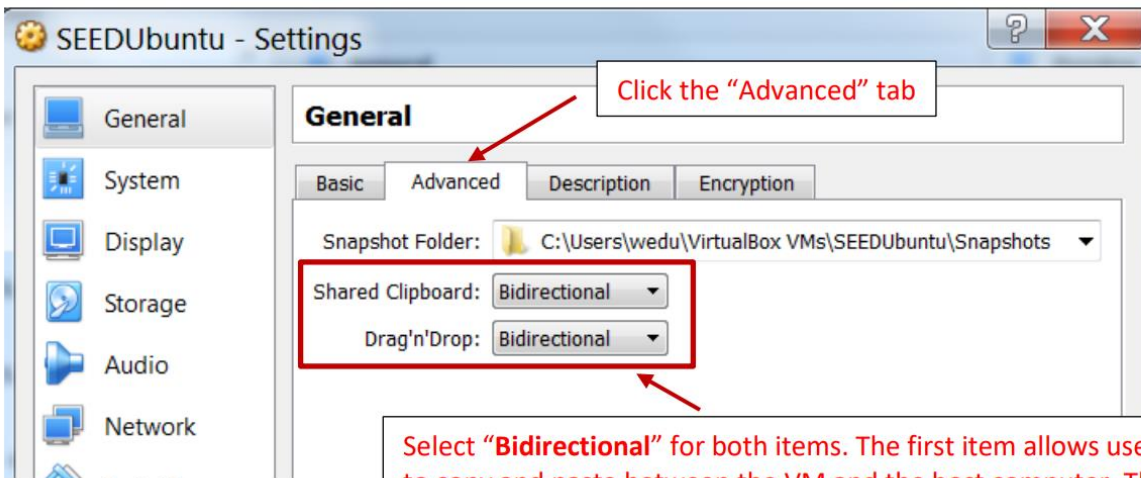
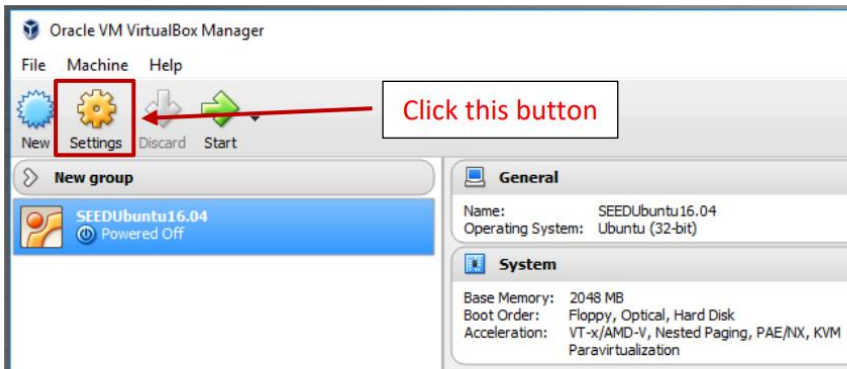


Pick this file in the unzipped folder:  
**SEEDUbuntu-16.04-32bit.vmdk.**  
Other files in the folder have similar names (they have a postfix "-s0xx"); don't pick any of these files.

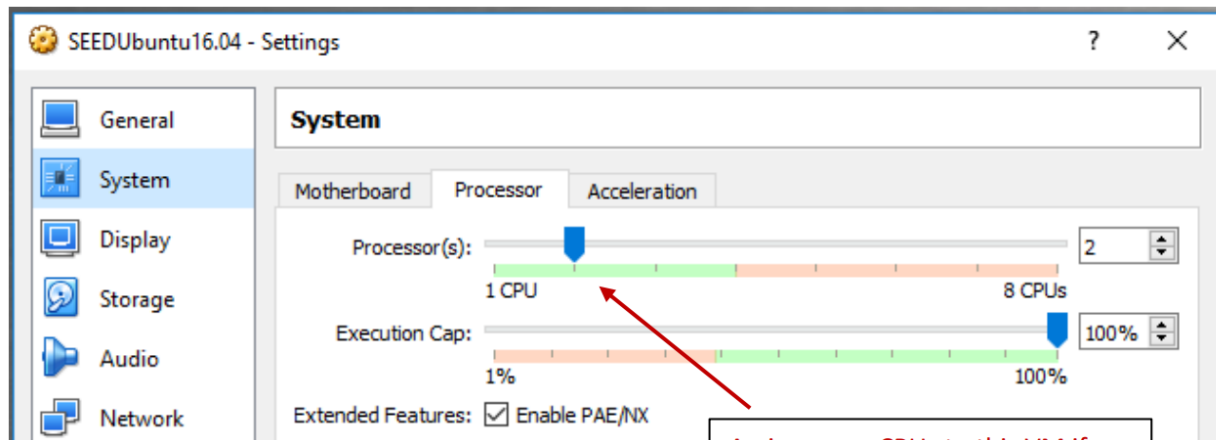
If there is no error, your VM will be created successfully. Please go to the end of the document if there is an error message.

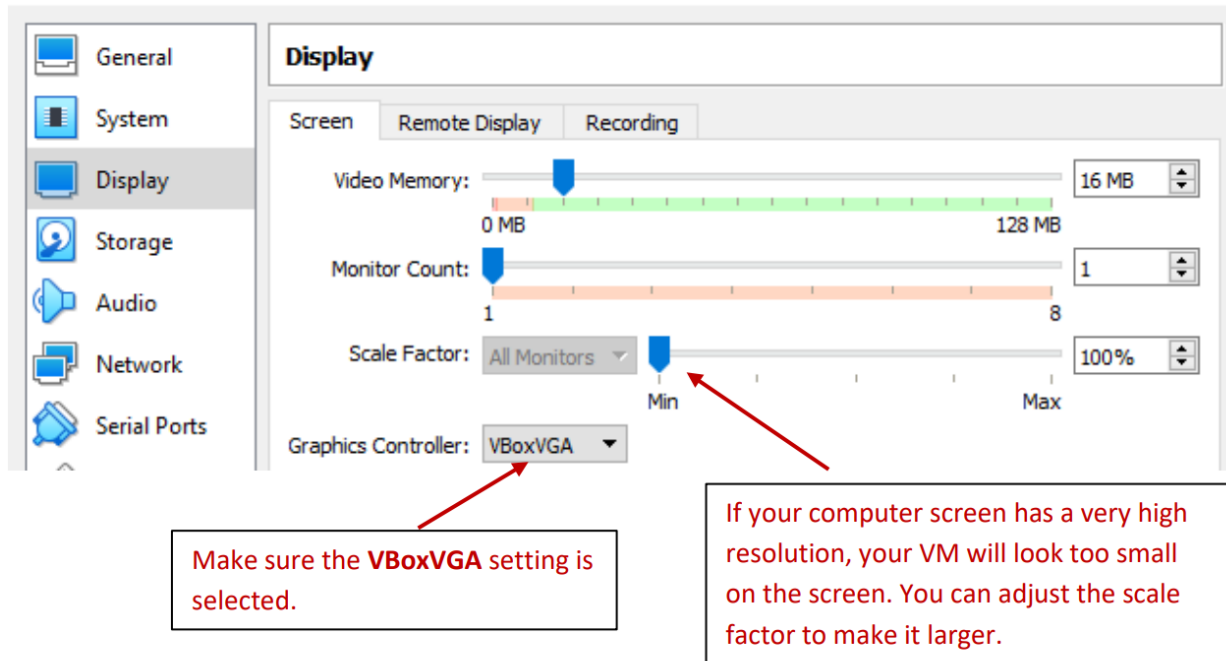


Step 5: Configure the VM



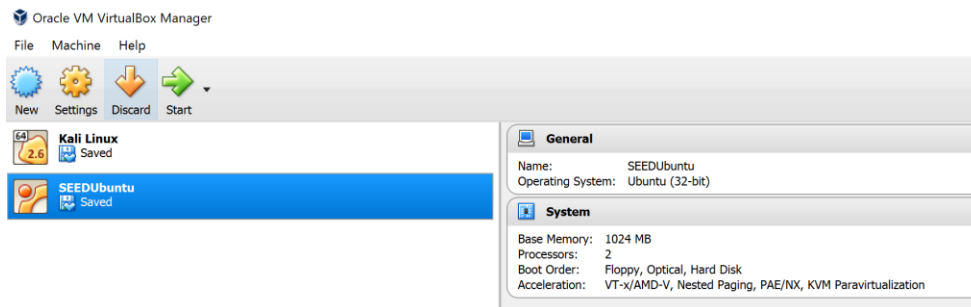
Select **"Bidirectional"** for both items. The first item allows users to copy and paste between the VM and the host computer. The second item allows users to transfer files between the VM and the host computer using Drag'n Drop.





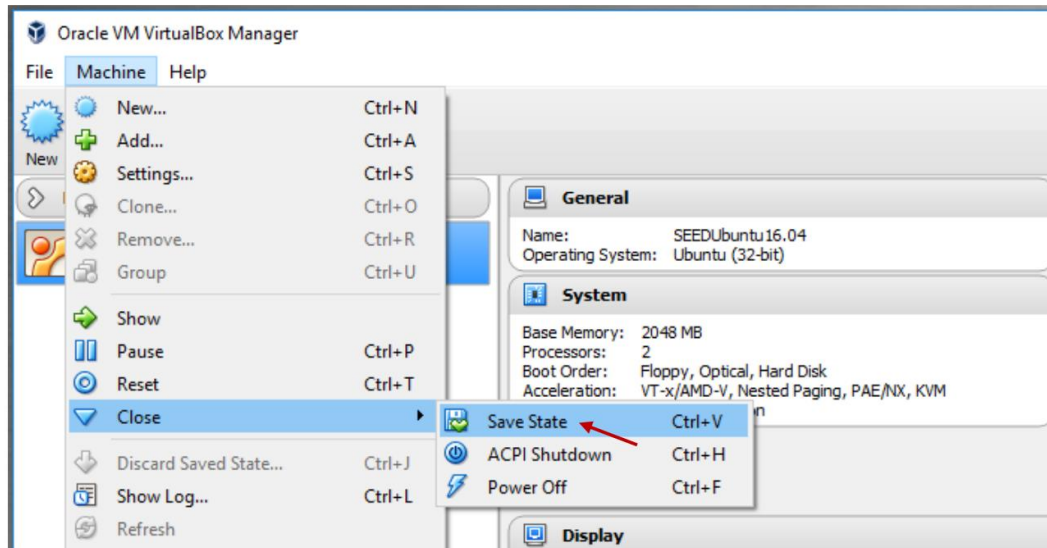
#### Step 6: Start the VM

If you have more than one VM, choose the one you want to use and then click the “Start” button.



#### Final Step: Stop the VM or Save the VM’s State (don’t need to do it right now)

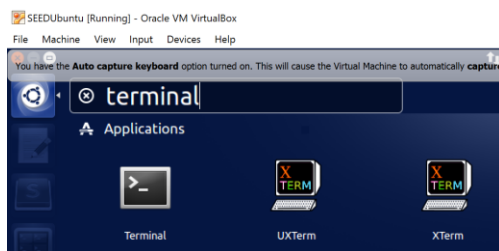
When you are done with your VM, you can always shut it down (from inside Ubuntu). A better alternative is to “freeze” the computer, so everything is saved. When you need it again, you can “unfreeze” it, and resume from where you left off. This is much faster and convenient than shutting down and rebooting the VM. To achieve this, you can use the “Save State” option.



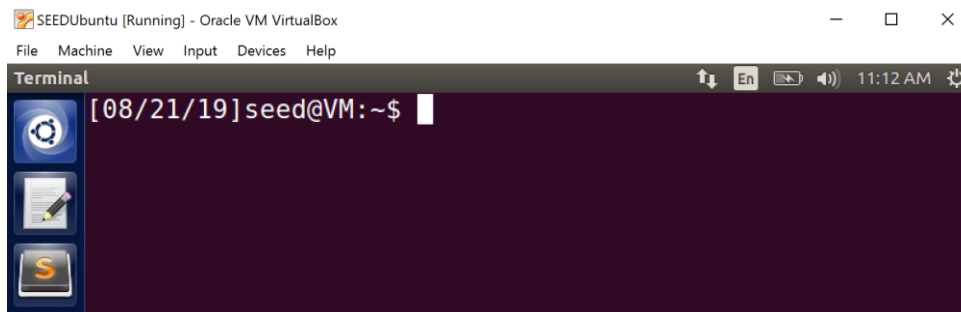
## 5. Getting familiar with Linux Operating System

### Step 7: Access Command-line Interface

Click the first icon on the left, it allows you to “Search your computer”. Then type “terminal”. It is the command line system that we will use for the following tasks.



Then, click the terminal icon, you will see the command-line interface.



Step 8: Execute the following commands. Please feel free to try different options and add in other commands if you want to. Extra commands or erroneous commands wouldn't cost you any point.

Commands	Notes
pwd	list the path of the current directory you are in
ls	list the content of the current directory

ls -l	list the content of the current directory, in long format
ls -a	list all the content of the current directory, including the hidden files
ls -al	
mkdir CSC302	make a new subdirectory under the current directory, called CSC302
cd CSC302	change directory into CSC302
pwd	You can see the path has changed
nano test.txt	nano is a text editor. You are editing a file named test.txt. Type something into the file and follow the instructions on the bottom of the screen and save. ^ means Ctrl.
ls -l	You can see the new file you just created. Pay attention to the permissions of the file.
chmod 777 test.txt	You can see the permissions of the file has changed. It grants all the permissions to yourself (owner), group members, and all others.
ls -l	List the file again, and you will see the permissions change from “-rw-r- -r- -” to “-rwxrwxrwx”.
<i>explore some other permissions using chmod command and use ls -l to show the differences in the permissions setup.</i>	

Step 9: Show the commands you have tried by typing command “history”. **Please submit your screenshot to the D2L submission folder.**

Here is an example output (don’t use this one as your lab report submission):

```
[08/21/19]seed@VM:~/CSC302$ history
1  pwd
2  ls
3  ls -l
4  mkdir CSC302
5  cd CSC302
6  pwd
7  nano test.txt
8  ls -l
9  chmod 777 test.txt
10 ls-l
11 ls -l
12 history
```

References:

[https://seedsecuritylabs.org/Labs\\_16.04/Documents/SEEDVM\\_VirtualBoxManual.pdf](https://seedsecuritylabs.org/Labs_16.04/Documents/SEEDVM_VirtualBoxManual.pdf)

[https://seedsecuritylabs.org/lab\\_env.html](https://seedsecuritylabs.org/lab_env.html)