Lab - Install a Virtual Machine on a Personal Computer

NOTE: The lab description says to install 2 virtual machines. You only need to install 1.

NOTE: To simplify your hands-on lab environment, the CSE-LABVM, Security Workstation are now available as a unified single virtual machine - Cybersecurity LabVM Workstation. You do not need to download and install multiple virtual machines, only this one.

Objectives

Part 1: Prepare a Computer for Virtualization

Part 2: Import a Virtual Machine into VirtualBox Inventory

Background / Scenario

Computing power and resources have increased tremendously over the last 10 years. A benefit of having multicore processors and large amounts of RAM is the ability to use virtualization. With virtualization, one or more virtual computers can operate inside a single physical computer. Virtual computers that run within physical computers are called virtual machines. Virtual machines are often called guests, and physical computers are often called hosts. Anyone with a modern computer and operating system can run virtual machines.

A virtual machine image file has been created for you to install on your computer. In this lab, you will download and import this image file using a desktop virtualization application, such as VirtualBox.

Required Resources

- Computer with a minimum of extra 4 GB of RAM and 50 GB of free disk space allocated to run virtual machines
- High speed internet access to download Oracle VirtualBox and the virtual machine image file

Note: The image file is about 4 GB, and can grow up to 50 GB after the virtual machines are in operation. While you can delete the image file after the virtual machine is imported, the 50 GB free disk space requirement is for users who decide to keep the image file.

Note: To install and run 64bit virtual machines on a host physical computer, the computer needs to be a 64bit system and have hardware virtualization technology enabled in BIOS. If you are unable to install the virtual machine image you may need to reboot your computer and enter setup mode in BIOS to enable hardware virtualization technology under advanced system settings.

Instructions

Part 1: Prepare a Host Computer for Virtualization

In Part 1, you will download and install desktop virtualization software, and also download an image file that can be used to complete labs throughout the course. For this lab, the virtual machine is running Linux.

Step 1: Download and install VirtualBox.

VMware Workstation Player and Oracle VirtualBox are two virtualization programs that you can download and install to support the image file. In this lab, you will use VirtualBox.

a. Navigate to **https://www.virtualbox.org**.

b. Choose and download the appropriate installation file based on your operating system.

c. When you have downloaded the VirtualBox installation file, run the installer and accept the default installation settings.

Step 2: Download the Virtual Machine image file.

The image file was created in accordance with the Open Virtualization Format (OVF). OVF is an open standard for packaging and distributing virtual appliances. An OVF package has several files placed into one directory. This directory is then distributed as an OVA package. This package contains all the OVF files necessary for the deployment of the virtual machine. The virtual machine used in this lab was exported in accordance with the OVF standard.

Click https://www.netacad.com/resources/lab-downloads?courseLang=en-US to download the **CSE-LABVM** and the **Security Workstation** OVA files.

Note: The files are about 5 GB in total, and it may take over an hour to download, depending on the speed of your internet connection.

Part 2: Import the Virtual Machine into the VirtualBox Inventory

In Part 2, you will import the virtual machine images into VirtualBox and start the virtual machines.

Step 1: Import the virtual machine files into VirtualBox.

a. Open **VirtualBox**. Click **File > Import Appliance...** to import the virtual machine image.

b. In the Appliance to import window, specify the location of the .OVA file. Click **Next** to continue.

c. The appliance settings window appears. In the Machine Base Folder field, you may need to click the dropdown arrow and change the destination by selecting Other and browsing to a folder (you can use your user's Documents folder). Set the MAC Address Policy to **Generate new MAC addresses for all network adapters**. Leave all other settings as default. Click **Import**.

d. When the import process is complete, you will see the new Virtual Machine added to the VirtualBox inventory in the left panel. The virtual machine is now ready to use.

Step 2: Start the CSE-LABVM virtual machine and log in.

a. In the inventory shown on the left, select the virtual machine you wish to use. In this example, you will select the virtual machine **CSE-LABVM**.

b. Click the **Start** button. It is the green arrow located at the top portion of the VirtualBox application window. A new window will appear, and the virtual machine boot process will start.

Note: If the virtual machine fails to start, either disable the USB Controller by going into the virtual machine's settings and unchecking the USB controller setting under USB, or go to the VirtualBox download webpage and download and install the Oracle VM VirtualBox Extension Pack.

c. When the boot process is complete, the virtual machine will automatically login and load the desktop. If you need superuser access at anytime, use the following credentials for the virtual machine **CSE-LABVM**:

Username: **cisco**

Password: **password**

Note: The window running the virtual machine is a completely different computer than your host. Functions such as copy and paste will not work between the two without changing the default settings in VirtualBox. Notice the keyboard and mouse focus. When you click inside the virtual machine window, your mouse and keyboard will operate the guest operating system. Your host operating system will no longer detect keystrokes or mouse movements. Press the right **CTRL** key to return keyboard and mouse focus to the host operating system.

Step 3: Familiarize yourself with CSE-LABVM.

The **CSE-LABVM** virtual machine you just installed is one of the VMs that you will be using in the course. Familiarize yourself with the icons in the list below:

The launcher icons are on the left (from top to bottom):

- **cisco's Home** - home directory for the user, **cisco**
- **DPI Scanling** - shortcut command for increasing the resolution
- **Firefox Web Browser** - internet browser
- **jcryptool** - cryptography and cryptanalysis tool
- **Keyboard** - quick access to change your keyboard layout
- **Terminal** - command line access
- **Wireshark** - packet sniffer and network protocol analyzer

a. Open the terminal application. Type the **ip address** command at the prompt to determine the IP address of your virtual machine.

What are the IP addresses assigned to your virtual machine?

b. Locate and launch the web browser application.

Can you navigate to your favorite search engine?

Step 4: Shutdown the CSE-LABVM.

a. Press the right ctrl key to release the cursor from the virtual machine. Now go to the menu at the top of the virtual machine window and choose **File** > **Close** to close the virtual machine.

What options are available?

b. Click the **Save the machine state** radio button and then click **OK**. The next time you start the virtual machine, you will be able to resume working in the operating system in its current state.

Step 5: Import and Start the Security Workstation virtual machine and log in.

a. To import the **Security Workstation**, follow the same procedures you used to import the **CSE-LABVM**.

b. In the inventory shown on the left, select the **Security Workstation**.

c. Click the **Start** button and the virtual machine boot process will start.

d. If you get an error about your Ethernet adapter, click **Change Network Settings**. From the **Name** dropdown list, choose the network adapter your computer is using to connect to the internet, and then click **OK**.

e. When prompted, change the user to **analyst**, enter **cyberops** as the password, and then click **Log in**.

Step 6: Familiarize yourself with Security Workstation.

The **Security Workstation** virtual machine is based on the Arch Linux distribution so that you can run a variety of services with minimal impact to your host machine's resources. Feel free to explore the VM as much as you like. However, this VM will be explored in more detail in later labs.

Step 7: Shutdown the Security Workstation.

In the VirtualBox menu, choose **File** > **Close**, choose **Save the machine state**, and then click **OK**.

Reflection

What are the advantages and disadvantages of using a virtual machine?