

The EECS VIRTUAL Computing Environment

Written by Professors M. Jenkin & H. Roumani

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1. WHAT IS IT?

EECS courses use a Unix variant - CentOS - as the basic operating system. Rather than requiring students to own such a machine in order to practice their course work, this course utilizes a virtual machine that can be run on a wide variety of different hardware platforms. Using it is like having a computer running inside your computer.

It is **strongly** recommended that you install the VBox in your laptop (even if you use Linux) as it will give you access to a variety of pre-installed and pre-configured software packages and enables you to get help much faster because everyone else (students, TAs, and profs) is using the exact same environment. Furthermore, if for any reason the VBox image ever becomes corrupt and no longer works correctly, you can simply download a fresh image and restore everything.

➡ *Note: If you don't have a personal machine, or if you couldn't install the VBox in it, you can still benefit from VBox while on campus as follows:*

Borrow a departmental laptop from the Prism monitor. These laptops have VBox pre-installed. Note that this VBox is read-only (it will "forget" whatever you store in it once you exit it) so it is important that you save your work on a USB key or in the cloud before exiting.

2. HOW TO GET IT

You will need three pieces to run the EECS environment on your machine:

1. **Download** the VirtualBox Software for your particular operating system (aka the host) from: <http://download.virtualbox.org/virtualbox/5.1.2/>. *Please download this particular version (5.1.2) because the newer one has a bug.*
2. **Download** the VirtualBox Extension Pack from the *same site*. This is the same for all operating systems. It provides support for USB devices and shared folders.
3. **Download** the EECS appliance from dl.eecs.yorku.ca/common/eecs-vbox-common-latest.ova. Use username and password “common” for this ~8 GB download.

3. INSTALLATION

***Note:** You must enable virtualization in your machine's BIOS before installing. BIOS options are accessible when you reboot your machine and press a particular, system-dependent key (such as delete or a function keys) as it restarts. This step is not applicable to Apple host environments.*

A) Installing the VBox Software

Double click on the VBox software that you downloaded (the first download). This will launch the installation program. Accept all defaults.

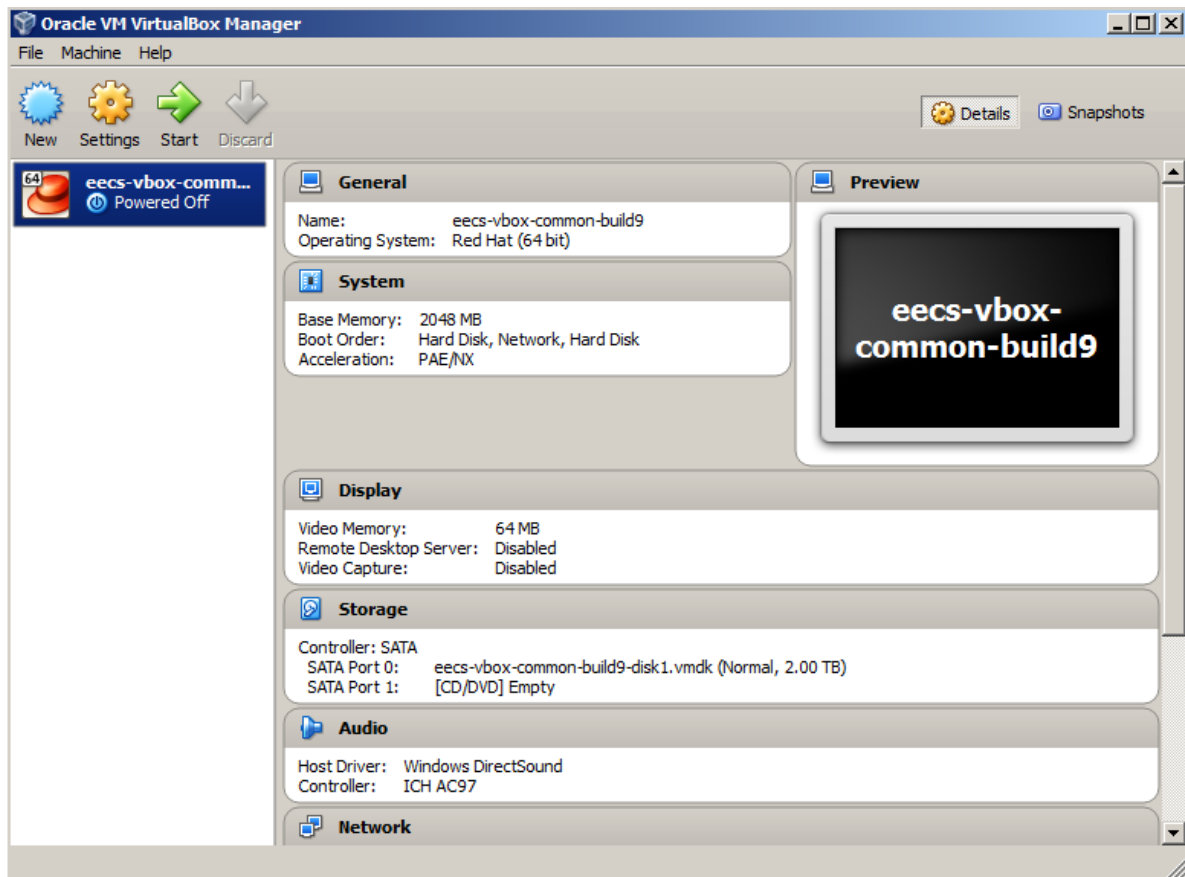
B) Installing the VBox Extension Pack

Double click on the VBox extension pack that you downloaded (the 2nd download). This will launch the installed VBox software and add the pack extension to it. When installation ends, launch the VBox software that you installed.

3. INSTALLATION, cont.

C) Importing the EECS Appliance

From the File menu, select *Import Appliance ...* and then navigate to the EECS appliance that you downloaded (the third download). Once the import is done, the VBox software window should look like this:

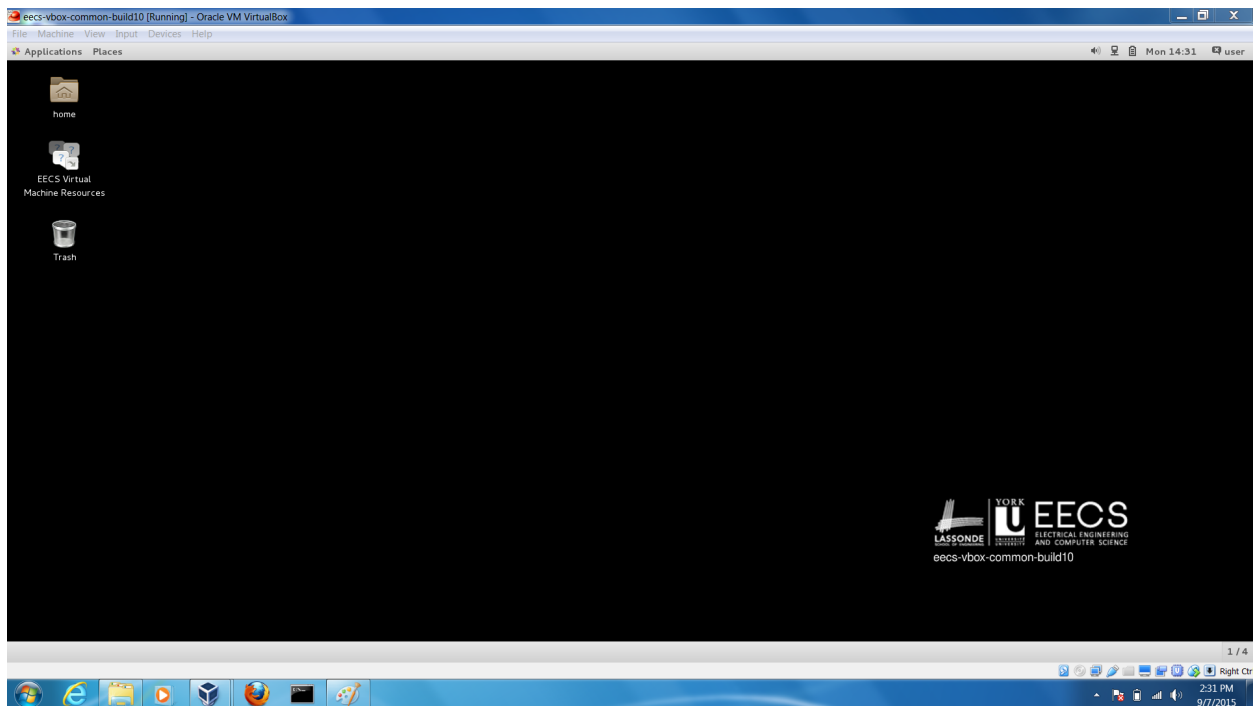


If the import has led instead to an error indicating that your hardware doesn't support 64 bit virtualization or acceleration, then check the computer BIOS to ensure that your computer is indeed 64-bit and that virtualization is enabled.

➡ *Otherwise, your hardware is not capable of emulating the EECS environment, and in that case, read the note in Section 1 about using departmental machines.*

4. RUNNING VBOX

Start the EECS VBox. *The first thing you should do* is to **update** the appliance. Use the *Applications, System Tools, EECS VBox Image Update* menu.



You can now delete the big ova file (the appliance). The VBox comes with many software packages that are preconfigured and ready to use. Most notably, you can launch a **terminal**; use a programming tools such as **Eclipse**, **Android Studio**, or **Atom**; or record the screen (accessible from the top menu to the left of the date).

➡ *Note: Do not confuse the appliance's top menu (which contains Applications and Places) with the VBox menu (which contains Machine, View, and Devices, plus others) with the host O/S menu or task bar. The VBox menu is auto-hidden at the top or bottom of the screen if you change to full-screen view.*

5. ABOUT YOUR VBOX

A) Networking

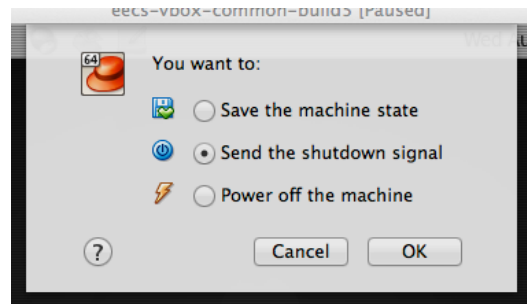
The VBox picks up its network connection through the host machine. Hence, if you need to modify your WiFi or cable connections, do so on the host. Ports 4413/8000 are forwarded so you can access a guest server from the host.

B) Account

Within the VBox, your username is “*user*” and you have root privileges with “*eeecsroot*” as the root password. This means you can make whatever changes you want to the machine, including installing updates, modifying the OS, etc.

C) Exiting

When you are finished running programs within the virtual machine you close the machine using the standard logout mechanism. The virtual machine will then provide you with three choices:



Save the machine state. This saves everything, including open windows and running programs, which makes re-starting the machine much quicker.

Send the shutdown signal. This simulates existing all running programs.

Power off the machine. This simulates unplugging the machine from the wall, which is *not* a good practice!

➡ *Note: Volume control (accessible from the right of the top menu) is relative to the host.*

5. CONFIGURING VBOX

A) Shared Folder

In order to transfer files between the host and the guest, you need to designate a folder (directory) as shared. You do this (before starting up a virtual machine) from the Machine menu under 'Settings'. This will bring up a dialog that enables you to choose a folder to share between the two machines. If the shared folder that you select in the host is named **X** then it will appear in the guest as folder */media/sf_X*.

B) Persistence

In order to save and/or backup your work, you can copy it either to a USB drive or to the cloud (e.g. DropBox or Google or Microsoft Drive). This is particularly important if you are using a read-only VBox.

C) Snapshots

Take snapshots of your VBox (accessible from the Machine menu). For example, take a snapshot after configuring the VBox. Later, if it hangs or gets corrupt for any reason, you can always restore any of your snapshots.

D) Hardware Access

In order to access a piece of hardware attached to the host from within the guest (such as a built-in camera or a USB device), you will need to select it from the *Devices* menu while within the VBox. This will release it from the host and allow the guest to access it.