

# Running your own copy of a labs VM

This document helps you run your own copy of a labs VM.

We have the capability for students and academics to run pre-configured virtual machines both on-campus and off-campus and across operating systems (works on Windows, OSX, Linux). We use [Vagrant](#) and [VirtualBox](#) to achieve this.

In the labs, the VM has write access to the student's H drive, and is easily reset to the starting state. On personal machines, the VM can be configured with write access to any part of the users drive, though by default only access to the VMs containing directory is allowed.

## Running your own copy

In these steps we use the *scc-110* VM as an example. If you need to access a different VM, remember to substitute the correct name.

### Prerequisites

- A 64bit computer and OS.
- At least 10Gb free hard drive space.
- Recommended 4Gb RAM or greater. If you have between 1Gb and 2Gb, you may be able to run VMs after adjusting the default configuration (see later).

### Steps

1. First, install VirtualBox and Vagrant. If you already have VirtualBox, make sure you have upgraded to v6 (the latest).
  - <https://www.virtualbox.org/wiki/Downloads>
  - <https://www.vagrantup.com/downloads.html>

2. Open a command prompt:

#### Windows

Run the command prompt (press the `Windows` key and type `cmd` for 'command prompt' and press `return` )

#### OSX (Mac)

Run the Terminal app ( `cmd + space` and type `terminal` and press `return` )

#### Linux

Run your preferred terminal

3. Create a working directory for the VM, download the configuration file, and start the VM:

#### Windows

```
mkdir $USER\scc-110
cd $USER\scc-110
powershell -Command "Invoke-WebRequest http://scc-vagrant.lancs.ac.uk/atlas/scc-110/Vagrantfile -Outfile Vagrantfile"
vagrant up
```

**Note** The above powershell command may fail for the HTTPS site, in which case you need to manually "save link as" [the config file](#) to the working directory via the browser then rename using with `rename Vagrantfile.txt Vagrantfile`

#### OSX and Linux

```
mkdir ~/scc-110 && cd ~/scc-110
curl -k http://scc-vagrant.lancs.ac.uk/atlas/scc-110/Vagrantfile > Vagrantfile
vagrant up
```

4. This brings up a new VM with a GUI. The first time this runs, a template VM (a box in vagrant terms) is downloaded, and this can take a long time. Once the VM is running, you can log in with the Vagrant standard username (`vagrant`) and password (`vagrant`).  
On the lab machines, the student's home drive (H:) is available in the VM under `/media/hdrive` with a symlink to `~/hdrive`. For home machines, the VM working directory (`~/scc-110` in the examples) is available under `/vagrant` in the VM. See the later section for customising which directories your VM can use.
5. When you've finished with the VM, you can save the state (`vagrant suspend`) or just destroy the machine (`vagrant destroy`).  
Suspending the VM will make it faster to start up next time.  
Next time you want to use the VM, just change into the directory and `vagrant up` either restores from suspended or creates a new instance as needed.

## Issues you may encounter

- 'VT-x/AMD-V hardware has been enabled, but is not operational.'

If this is the case, you need to change a setting in your computer's BIOS to allow virtualisation, then remove (**vagrant destroy**) and restart (**vagrant up**) your labs VM.

- **Less than 4Gb RAM**

Edit the **Vagrantfile** and replace the line **vb.memory = "2048"** with **vb.memory = "1024"**

## Accessing your data, or mapping drives

Your VM can access your local data, such as mapped drives or desktop or source directories. This is achieved by changing the **Vagrantfile** configuration file. Here we present some examples. Any of these extra options need to be put underneath the line that starts:

```
config.vm.box_url = ...
```

Here we make your desktop available in the VM under **/vagrant\_host\_desktop**.

### Windows

You need to change the *YourUsername* part to your actual username on your machine.

```
if (/mswin|msys|mingw|cygwin|bccwin|wince|emc/ =~ RUBY_PLATFORM)
  config.vm.synced_folder "c:/Users/YourUsername/Desktop", "/vagrant_host_desktop"
end
```

### Linux and OSX

```
if (/linux/ =~ RUBY_PLATFORM)
  config.vm.synced_folder "~/Desktop", "/vagrant_host_desktop"
end
```

We can also connect to our H drive by following the [Personal filestore \(H drive\) help](#) from ISS. In these examples, we make your H drive available in the VM as **/media/hdrive** in the same way the labs VMs work:

### Windows

Assuming you have mapped a local H: to you H drive:

```
if (/mswin|msys|mingw|cygwin|bccwin|wince|emc/ =~ RUBY_PLATFORM)
  config.vm.synced_folder "H:\\", "/media/hdrive"
end
```

### Linux

Assuming you have mounted your H drive via SMB:

```
if (/linux/ =~ RUBY_PLATFORM)
  config.vm.synced_folder "/media/mounted_h_drive", "/media/hdrive"
end
```

### OSX

Assuming you have mounted your H drive via SMB:

```
if (/osx/ =~ RUBY_PLATFORM)
  config.vm.synced_folder "/Volumes/your_user_name", "/media/hdrive"
end
```

Have a look at the docs for more options, and you need to pay attention to the paths if you're on Windows:

### Vagrant docs

[https://www.vagrantup.com/docs/synced-folders/basic\\_usage.html](https://www.vagrantup.com/docs/synced-folders/basic_usage.html)

### Quick example of Windows path considerations

<https://github.com/mitchellh/vagrant/issues/1827>

## Differences to running in the labs

Each lab has a set of VMs available where we have pre-cached the VM template.

When running on the Windows labs machines, VMs must be started from the Start Menu entry, and not from VirtualBox or vagrant.

When running on the Linux labs machines, VMs must be started from a terminal by typing the **svagrant** command, which acts as a thin wrapper around vagrant itself.

## Issues

- On some machines starting a VM can take up to 10 minutes, though the majority start within a few minutes.
- If the start process of a VM is interrupted enough times, it can prevent subsequent starts. If this happens, contact SCC Systems.