IT Technology
Networking
Assignment 3

Author
Simon Slamka
Class 212
sisl37451@edu.ucl.dk

8 Sept. 2021

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2 Introduction

This assignment documents how to install a hypervisor and then run a GNU/Linux distribution within. In the case of this hand-in, *Debian* is used as a distribution and *Parallels* is used as a hypervisor. Parallels has the same basic capabilities as VMWare Workstation.

Note: the steps described in this document are applicable to all guest systems installed through Parallels.

3 Audience

This report is intended for individuals interested in virtualization and/or networking basics running macOS. It is an ideal entry point for students without any experience with virtualization and/or networking.

4 Definitions

The term "*hypervisor*" means a program that can create and operate virtual operating systems within an already running operating system, also called the *host* operating system.
Operating systems run by a hypervisor are called *guests* or *guest machines*.
In general, all systems running under a hypervisor are called *virtual machines*, or *VMs*.
A hypervisor usually dedicates a portion of the host's resources for the virtual machines to use. For storage, a virtual hard drive of fixed size is usually created for the virtual machine. The hard drive can also be of a dynamic size, resizing based on the guest system's needs on the fly.
Parallels, *VMWare*, and *VirtualBox* are all hypervisors.

5 Inventory

5.1 Software:

- Parallels Desktop 17
- Debian GNU/Linux aarch64 on kernel 4.19

6 Tasks

1. Install *Parallels* on a host computer.
2. Install a *Debian Linux* Virtual Machine (VM) in *Parallels*.
3. Connect the Linux VM to the "*Shared Network*" network
4. *Shared Network* will share the host's internet connection, which means that the Linux VM should now have internet access via *Shared Network*.
5. Run the default internet browser on Debian to verify that the guest system really is Debian (run "**`uname -a`**" in *Terminal* to find this information).

7 Answers

7.1 Download & install

To install *Parallels* for *macOS*, navigate to the download page[1] and press the download button.

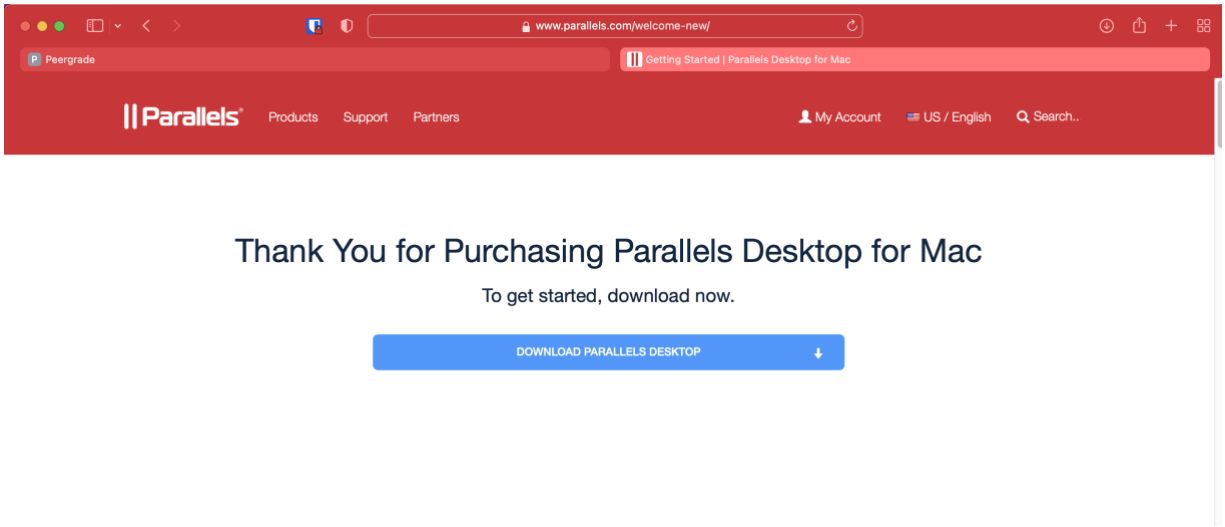

Figure 1 - the official download page of Parallels for macOS

As soon as the download is complete, open the *.dmg* file. *Parallels* will then install automatically.

7.2 Add a guest system

To install a guest system to Parallels, open it up and click the "+" button, as shown.

Figure 2 - the main interface of Parallels

After pressing the "+" button, a window with a choice of *GNU/Linux* distros will appear. Select "*Debian GNU/Linux*" and click continue.

[1] https://www.parallels.com/products/desktop/download/

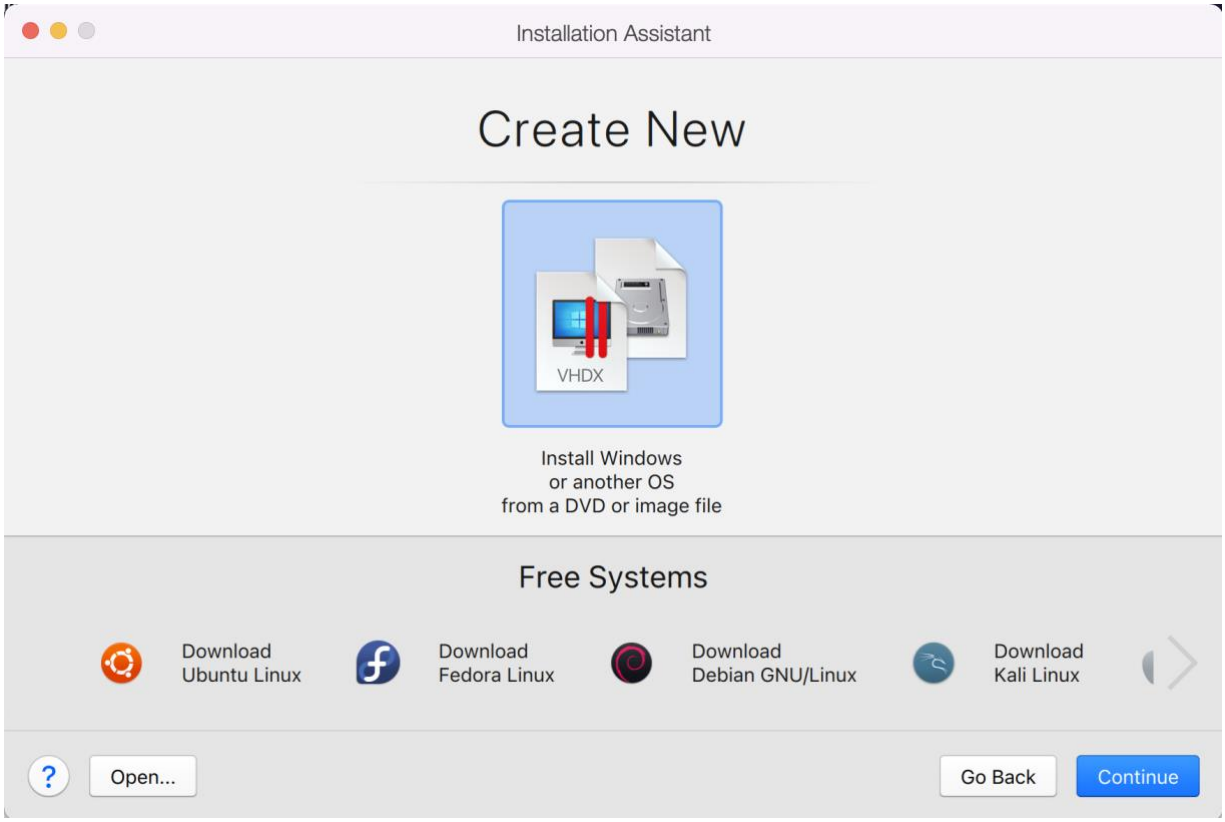

Figure 3 - a selection of GNU distros to choose from. You can also choose your own image

On the next screen, *Parallels* will display basic details about *Debian* and prompt you to download its image. Click *Download* to begin. After the process is finished, you will be ready to launch your new *GNU/Linux* guest.

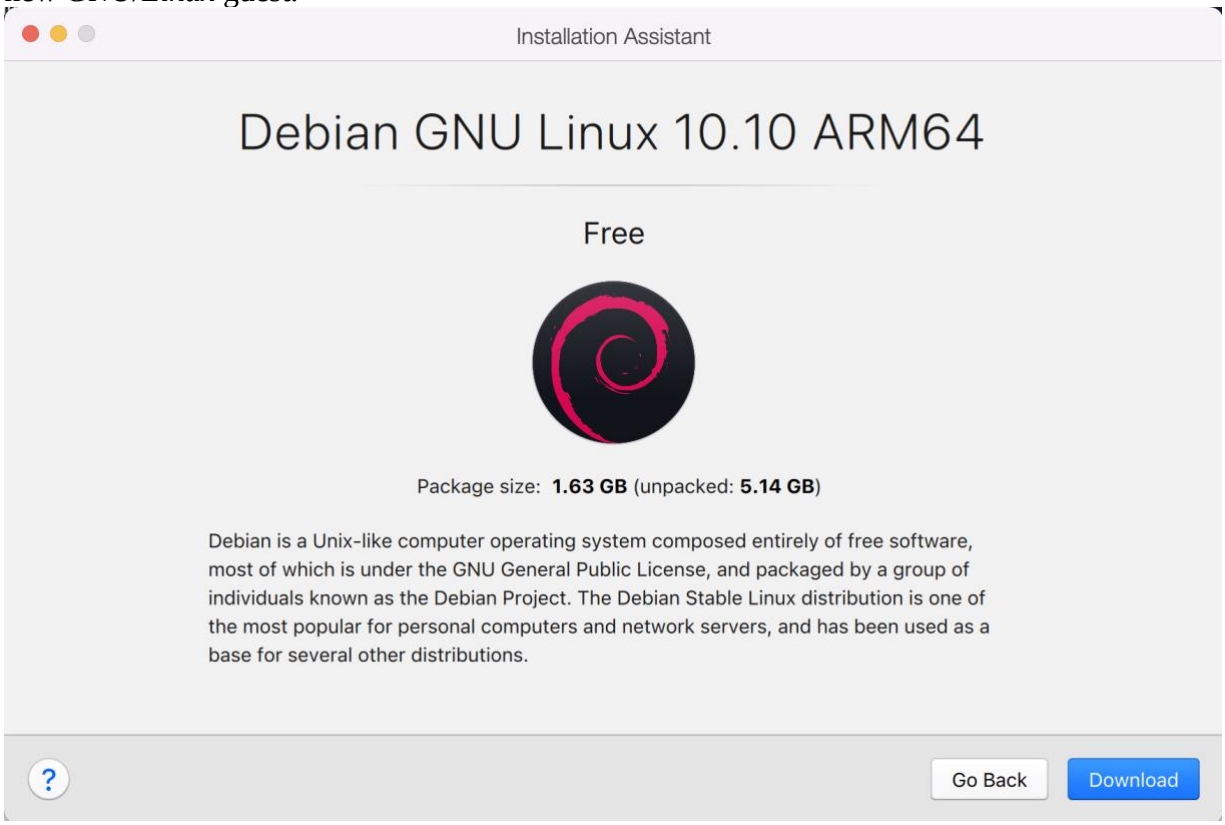

Figure 4 - the information screen about the distro selected and a prompt to download its image

7.3 Configure networking in a guest system

To configure networking in *Parallels*, head to the *Configure* window of your VM by right-clicking on it and click on *Hardware* within the newly opened window.

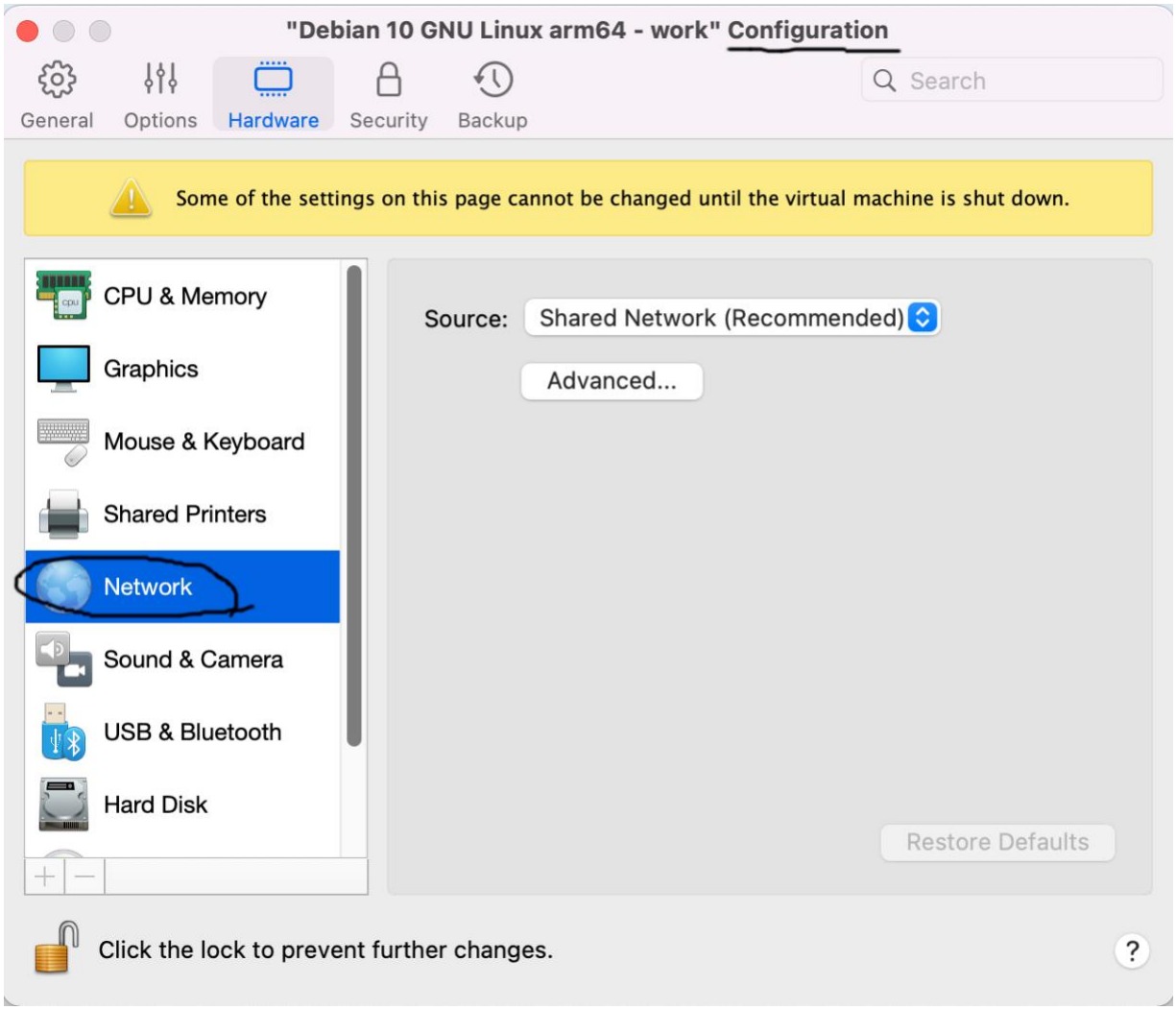

Figure 5 - the network config menu in Parallels settings - the Shared Network mode will be selected by default

By default, the *Shared Network* mode will already be selected – this is all you need to connect to the Internet, which means that the machine can now be launched.

7.4 Boot the guest system and test network connection

The machine can now be booted. After logging in, we will automatically be connected to the host's network.

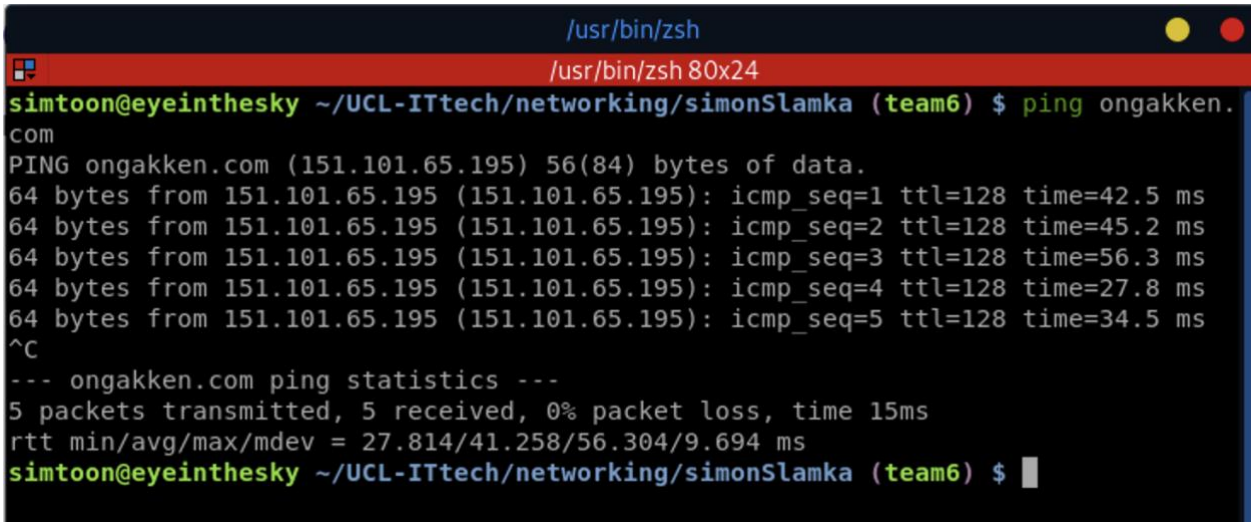

Figure 6 - the ping command pinging a remote location successfully, proving that we're connected to the Internet

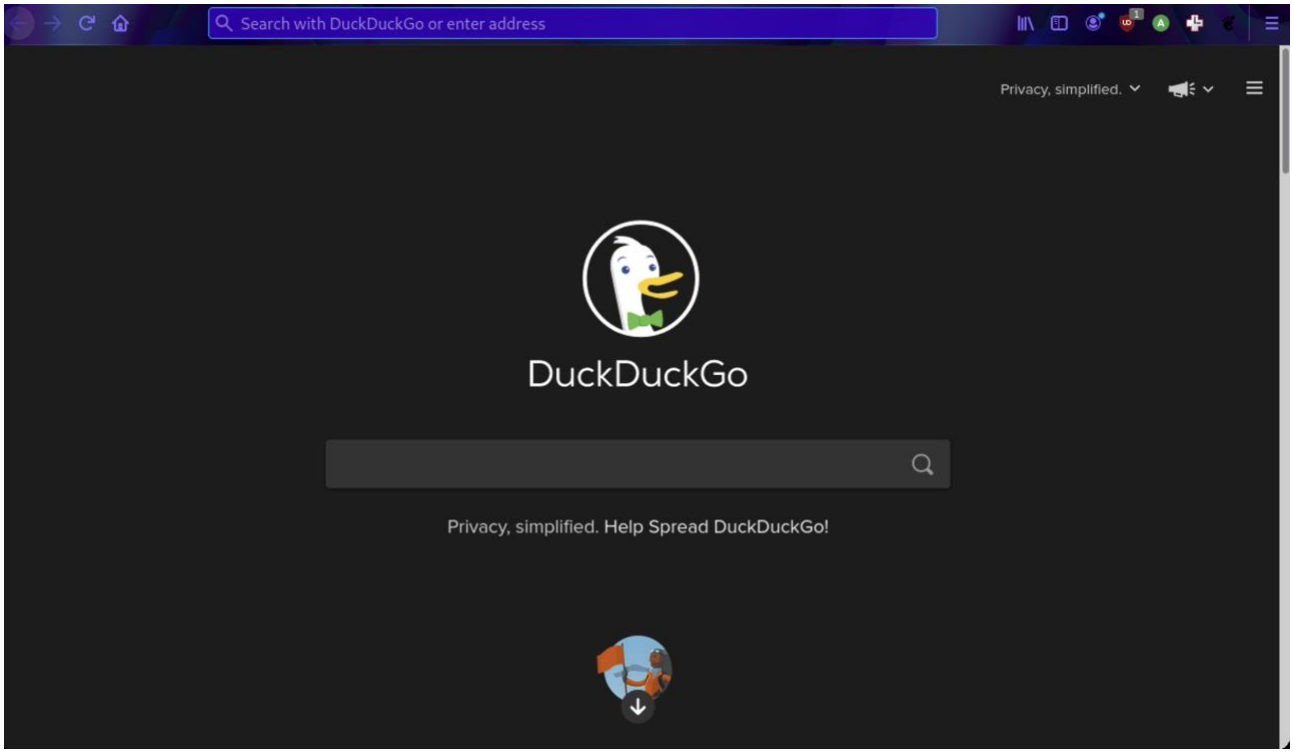

Figure 7 - firefox-esr successfully opening DuckDuckGo, further proving that we're indeed online

7.5 What next?

We have now proven that we're online. From here, we can move on to updating the system using **`sudo apt update && sudo apt upgrade -y`** and installing the packages we need.

8 Conclusion

We have successfully installed the *Parallels* hypervisor on macOS, installed *GNU/Linux Debian* to it as a virtual machine, made sure that the virtual machine is configured to use the network connection of our host (*Shared Network*), and proven that we're online by pinging a remote location and opening a live site in a browser.

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