Laboratory #1: Installing Debian GNU/Linux

Unix (420-321-VA) - Fall 2021
Teacher: Tassia Camoes Araujo

Goals:

1. Distinguish live from installed operating systems
2. Install a GNU/Linux distribution
3. Explore a GNU/Linux system

Instructions

You'll be instructed to perform a full installation of a GNU/Linux system. As there are many *distributions* available, which might differ from one another, I'll usually focus on my distribution of choice: the *Debian GNU/Linux (http://www.debian.org)* . However, if you have previous experience and prefer to go with another distribution, you are free to do so and adapt instructions in order to have the same tasks accomplished.

Part I: Prepare for the installation

1. Make sure you have at least 50GB of continuous free space in your hard drive. If not, resize your partitions before proceeding to the installation. If you have Windows installed, I suggest you use Windows Disk Management to srink other partitions. You could also use the Disks application from a Linux live image to manage your disk (you'll run that in Part II). In any case, make sure you have a backup of your data first (high risk of data loss)!
2. If you have access to a working system while doing this lab, you'll be able to flash your USB stick yourself.
    a) Download a Linux installation image (a file with .iso extension), which I suggest to be the *Debian Bullseye* live image including firmware with *Cinnamon* desktop environment – you'll learn more about what this all means later. Here is the link for the direct download: https://cdimage.debian.org/images/unofficial/non-free/images-including-firmware/11.0.0-live+nonfree/amd64/iso-hybrid/debian-live-11.0.0-amd64-cinnamon+nonfree.iso
    b) You can use the software Etcher (https://www.balena.io/etcher) to write the bootable image into your USB stick. On a Linux command line you could use the command *dd* followed by *sync, for instance*: *$ sudo dd if=~/Downloads/debian-live-11.0.0-amd64-cinnamon+nonfree.iso of=/dev/sda bs=1M status=progress && sync*
3. If you don't have an operating system installed in your disk, you'll need to ask your teacher or a colleague to prepare a bootable USB for you.

Part II: Run a live system

1. Plug the USB stick on the machine and turn on the computer. You will get to a black screen saying that no hard drive was found, press F1 to continue. This lab machines are already configured to boot from USB, but if you follow these steps somewhere else, you might need to configure the BIOS beforehand.
2. If you get just a blinking cursor on a black screen, or the message “No boot device found”, just reboot and try again. You need to see the Debian boot options to proceed.
3. Choose the first option to boot the system “live”, which means that the whole system is loaded in memory (RAM) with no need of a hard disk. You can run a live system in any computer without worring about messing up with the installed operating system (OS). Once you reboot the system and remove the USB stick, the underlying OS should be intact. That’s a good thing to do if you want to show some friends what you are learning in class.
4. Click around and explore the system you have at hands. Try to change the wallpaper, open a browser, use libreoffice, use GIMP, play games, etc. What was your first impression of a Linux system? Include this in your lab report.
5. Take a screenshot to depict your exploration of the system. Save it for your report.
6. Use the live system to make sure your network cables are well placed. The machine has 3 network interfaces, but only one will provide you with an IP address to access the Internet (most likely, the correct one is *enp5s0)*. When configuring the network, you can try each interface until one works. If you can’t get an IP address with none of them, you might want to start swapping cables on the back, and at some point you’ll get it. Make a note of the good interface to use later, during the installation.
7. Before proceeding to the installation on disk, you can check this article with some visual guidance of the installation process: https://www.linuxtechi.com/how-to-install-debian-11-bullseye/
8. If you want an official documentation, the Debian Installation Guide is a good (and lengthy) choice: https://www.debian.org/releases/stable/amd64/ (go over the table of contents, so you’ll know what info is there in case you need in the future)

Part III: Install the system on a hard disk

1. Reboot the machine to install the system on your disk. At this point, you should have only the USB with the installer plugged in.
2. Once you see the Debian boot options, you can plug the USB/e-SATA of your hard disk. Make sure you plug the disk before the detection of disks during the installation process.
3. Among the boot options, choose Graphical Debian Installer and proceed with the installation. There will be many concepts that you might not fully understand during the installation process, and that is totally fine! Take notes, research online, ask your teacher. If you don’t understand something, just go with the default choice, and it should be fine. Remember: you can always restart the installation, if needed.

4. A few things to note during Debian installation process:
    a) You can give any name to your machine, be creative!
    b) Take note of your root password (admin), or choose something that you won't forget!
    c) When partitioning your disk, choose "Guided – use the largest continuous free space" and "All files in one partition". The largest free space available should now have an ext4 partition to mount the root filesystem (/) and a swap partition. You can finish partition and write changes to disk.
    d) Then you will install GRUB boot loader on the hard disk. Once you agree to install, you'll be asked to select the disk. Select the correct device and continue.
    e) If everything went fine, the installation will finish and the system will be ready to reboot. Remove the USB stick to allow the boot to happen from disk.
    f) You will see the login screen. Enter the username and password you created at installation. Enjoy your newly installed system!

Part IV: Deliverables

1. Open LibreOffice to create your lab document.
2. Include a header with course name, section, your student name, the license of your work (suggestion: one of the Creative Commons licenses).
3. Write a paragraph or two about your experience:
    a) What was your first impression of a Linux system? Describe your exploration with the live system, and how easy or hard was it to perform the actions you wanted. Include the first screenshot you took (Part II, questions 4 and 5)
    b) How would you describe your overall experience with the installer?
    c) Did you repeat the process with different selections?
    d) Did you make it from beginning to end with no problem?
        - If you got blocked at some point, how did you find the solution?
        - If you didn't complete the lab, let me know where did you stop, and what was the blocker
4. Export your file as PDF and upload it to Omnivox.

Thanks!