Laboratory #2: Introduction to VMs and Linux commands

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

Goals:
1. Solidify license concepts
2. Introduction to Virtual machines
3. Introduction to the Linux Shell

Instructions

Part I: Software licenses and Free Software

According to the following definitions:

- **Proprietary software** is software that can be legally modified or distributed only by some set of authorized persons.

- **Commercial software** is software distributed by some company for profit, either via direct sales or maintenance and support.

- **Free/Libre and Open Source software (FLOSS)** is software distributed under terms that allow users to run the software for any purpose as well as to study, change, and distribute it or any adapted version of it.

1. Can a software be free and proprietary at the same time? If yes, give an example, if no, explain why.

2. Think about the difference between *free speech* and *free beer*. Is Free Software mainly about free speech or free beer? Why?

Part II: Running Linux on a Virtual Machine (outside the lab session)

Using a Virtual Machine (VM) allows you to run an OS on top of another OS, as if it was a simple desktop application.

"In computing, a system virtual machine is a virtual machine that **provides a complete system** platform and supports the execution of a complete operating system (OS). These usually **emulate an existing architecture**, and are built with the purpose of either providing a platform to run programs where the real hardware is not available for use..." (source: Wikipedia)

We will use a virtual machine to run a Linux system on top of school computers' Windows (any other lab or study room). You could run a full installation process yourself (good practice!), but there are Linux virtual machines readily available for download, so if you need to save time, just use them.

1. Use the Windows operation system of one of the school computers.

2. Visit OSBoxes website (https://www.osboxes.org/) and get the 64-bit image for VirtualBox of any Linux distribution. Check the information tab for username and password.

3. Open VirtualBox (if you are not in school, make sure you have it installed first). Create a new machine. Give it a name, type, version, give it a memory size, and use an existing virtual hard disk file (choose the .vdi file that you downloaded earlier).

4. Start the new machine. You should see the Linux system booting. Login using the credentials you got from OSBoxes.

5. Within your Linux VM, open a terminal. Take a screenshot of the entire Windows screen, showing the VirtualBox window with a running Linux and the open terminal window.

Part III: Introduction to the Linux shell

Learning commands is going to be a major task of this course.

Especially for Linux servers, that you need to access remotely, you interact with the system via *shell commands*. A shell is a command interpreter that executes commands in a UNIX system. It gathers input from the keyboard, executes the request, and print the output of programs as text. When the program finishes executing, the command prompt is shown again, and the shell is ready to receive another command.

Even in a desktop system, which usually provides a graphical interface, most Linux users use commands in a terminal for system tasks. The terminal is a graphical software that starts a *shell*, just like you have when connect to remote servers.

Open a terminal and practice the following commands. *Attention: the shell is case-sensitive, all commands below are lowercase.*

help

man

echo

mkdir (-p -v)

clear

cd (with/without arguments)

ls (-l -a -h -S -m --color –group-directories-first)

alias

touch (-d, -c)

cat (-n -e)

more (space bar, q)

less (arrow/page up/down, /, q)

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 common licenses).

3. Answer questions in Part I.

4. For part II, include the screenshot of your Linux virtual machine running on Windows.

5. For Part III, create your table of commands with the headings given below. Include a few options you find useful and their purpose (unless the command doesn't allow options) and your own execution log (the complete comand line).

6. Export your file as PDF and upload it to Omnivox.

Command	Description	Explored options	Log
echo	Write back the given string	-e enable interpretation of backslashes escapes	$ echo -e "Hello\nWorld"
help			
man			
mkdir			
clear			
cd			
ls			
alias			
touch			
cat			
more			
less			