College of Computer Training (CCT)

Assignment Cover Page

Module Title:	Operating Systems
Assignment Title:	Proof of Concept Linux Virtual Network Project
Lecturer Name:	Michael Weiss, mweiss@cct.ie
Student Names:	Keith Cavalcante Fernandes
Student Nos.:	2020353
Link:	
Assignment Due Date:	8th May 2021, 23.55

Academic Year: **Year 1** ■ **Year 2** ☐ **Year 3** ☐

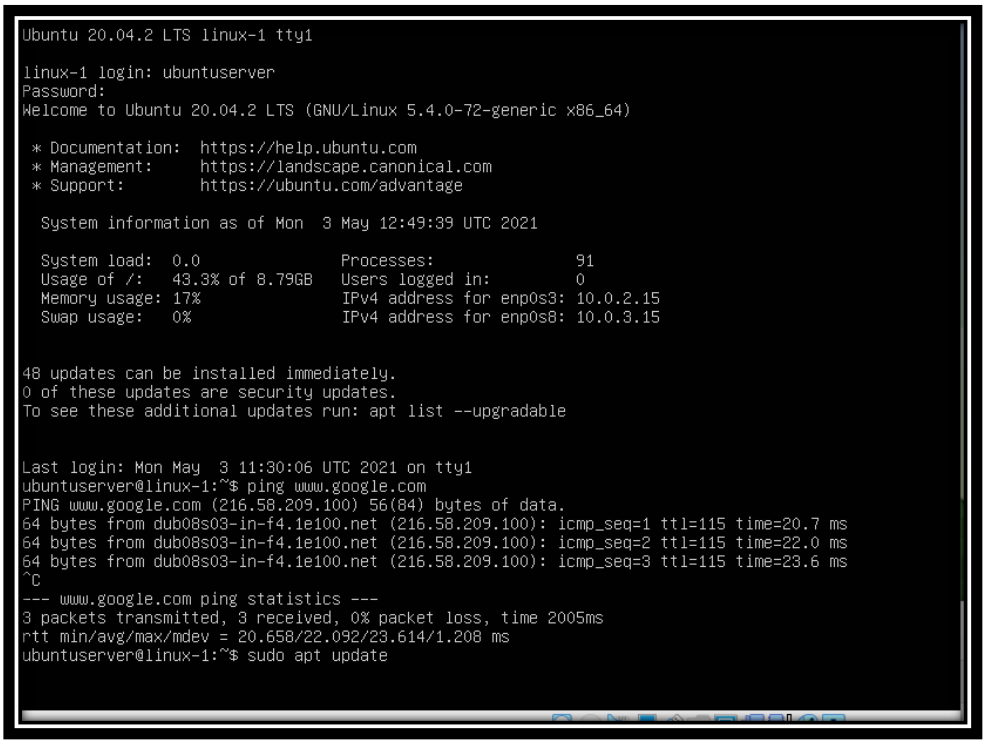
DECLARATION

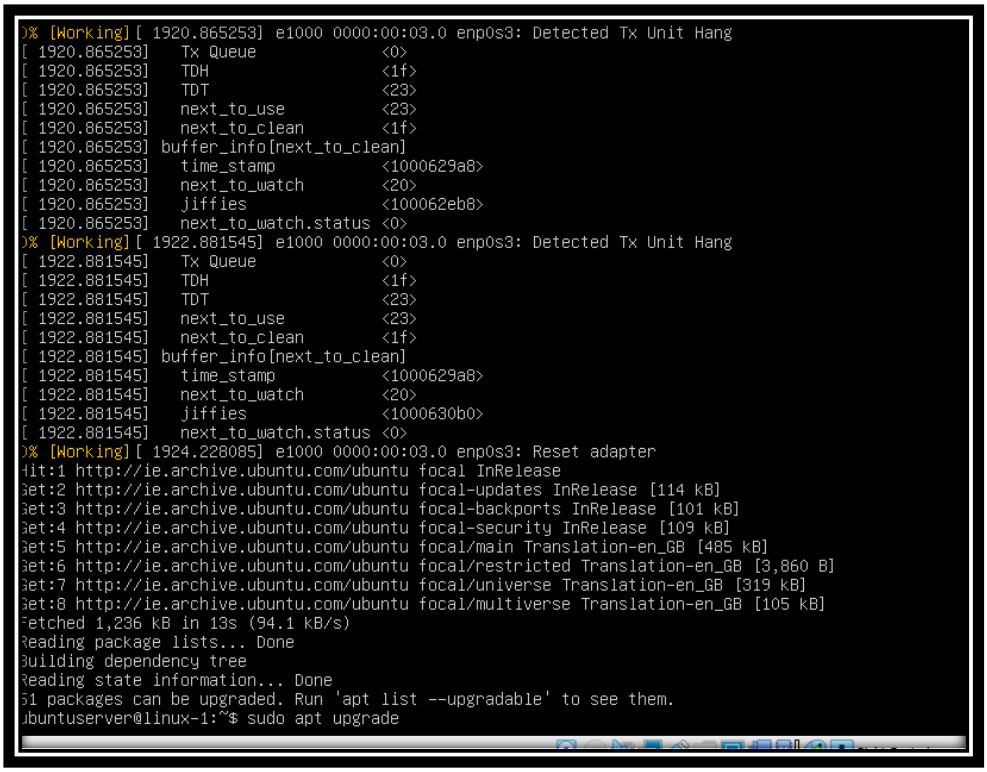
I, the above named student, confirm that by submitting, or causing the attached assignment to be submitted, to CCT, I have not plagiarised any other person's work in this assignment and except where appropriately acknowledged, this assignment is my own work, has been expressed in my own words, and has not previously been submitted for assessment.

Table of Contents

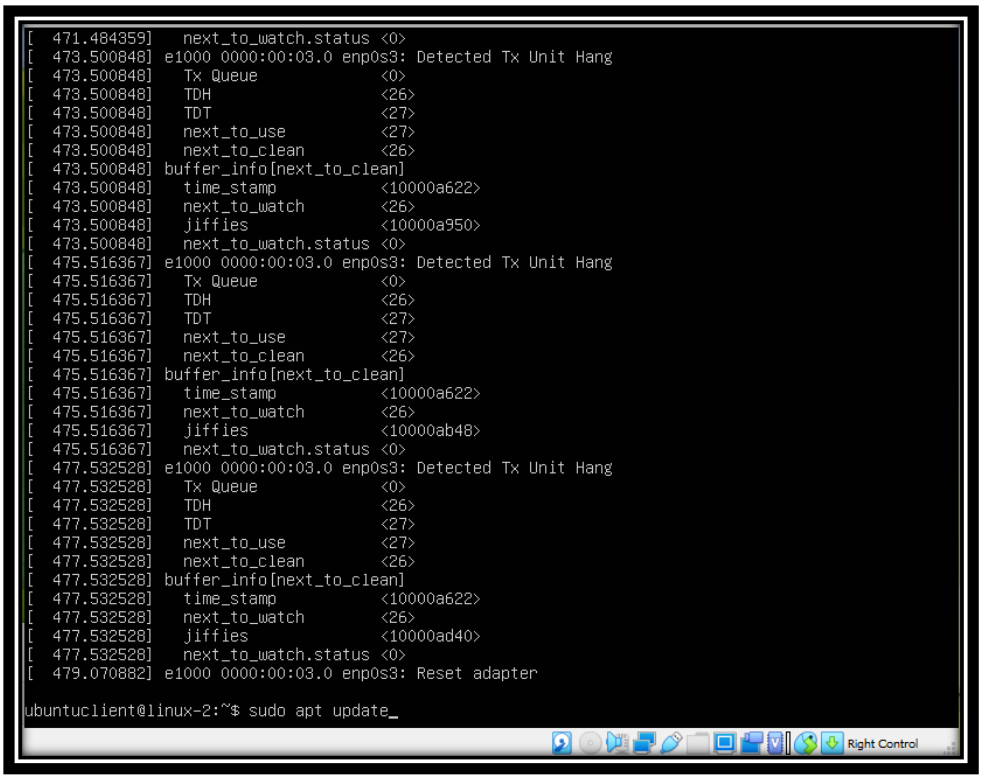
‘Consult & Connect Ltd’

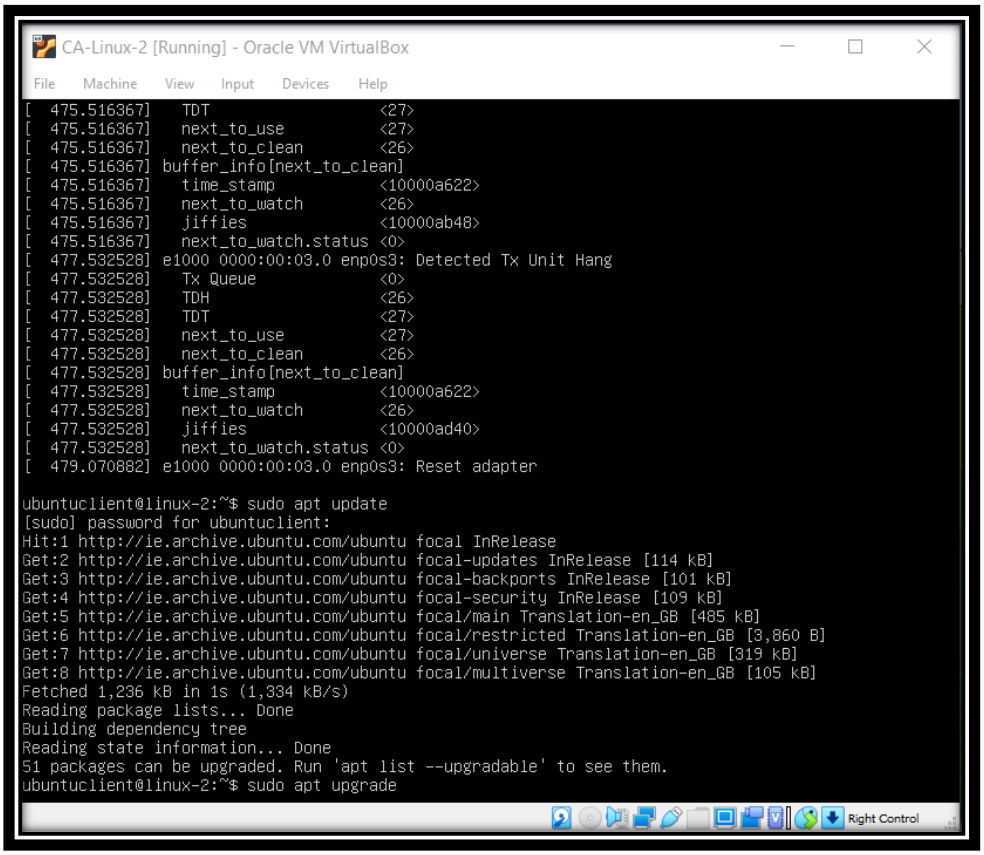
A networking consultancy services for companies located in Ireland. Bellow you see step by step of the project of a virtualized Linux Network infrastructure based on a new third level college’s network – the name of the college is Dublin City College (DCC).



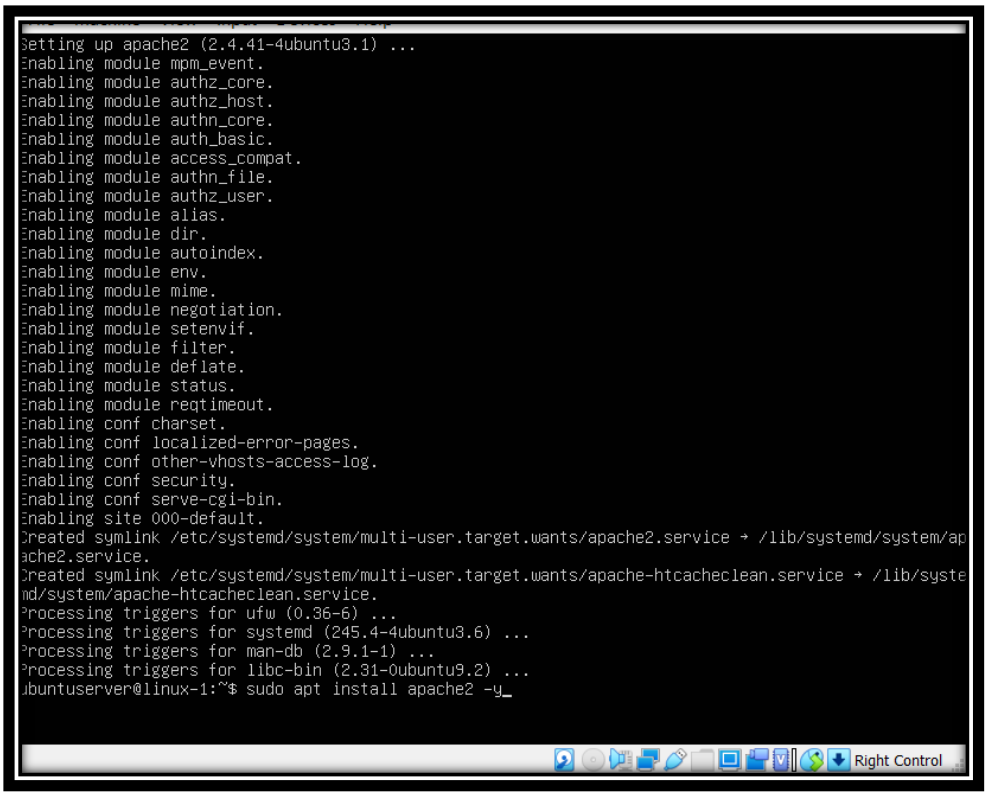


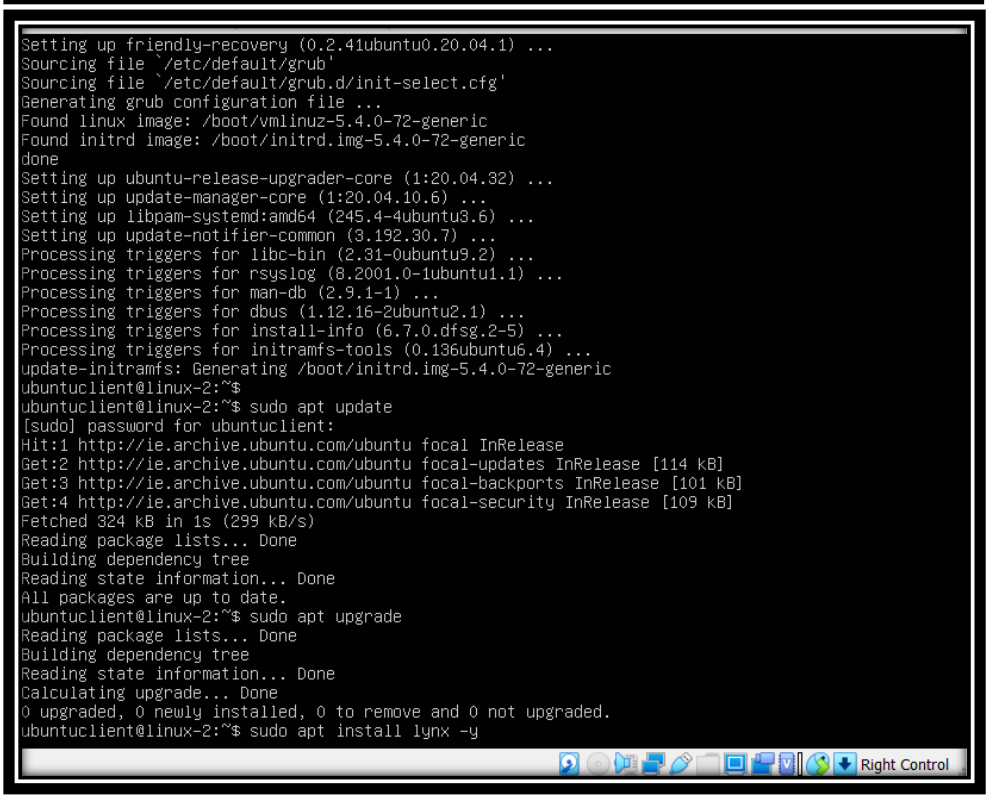
Obtain Linux updates - Update and upgrade the server system.



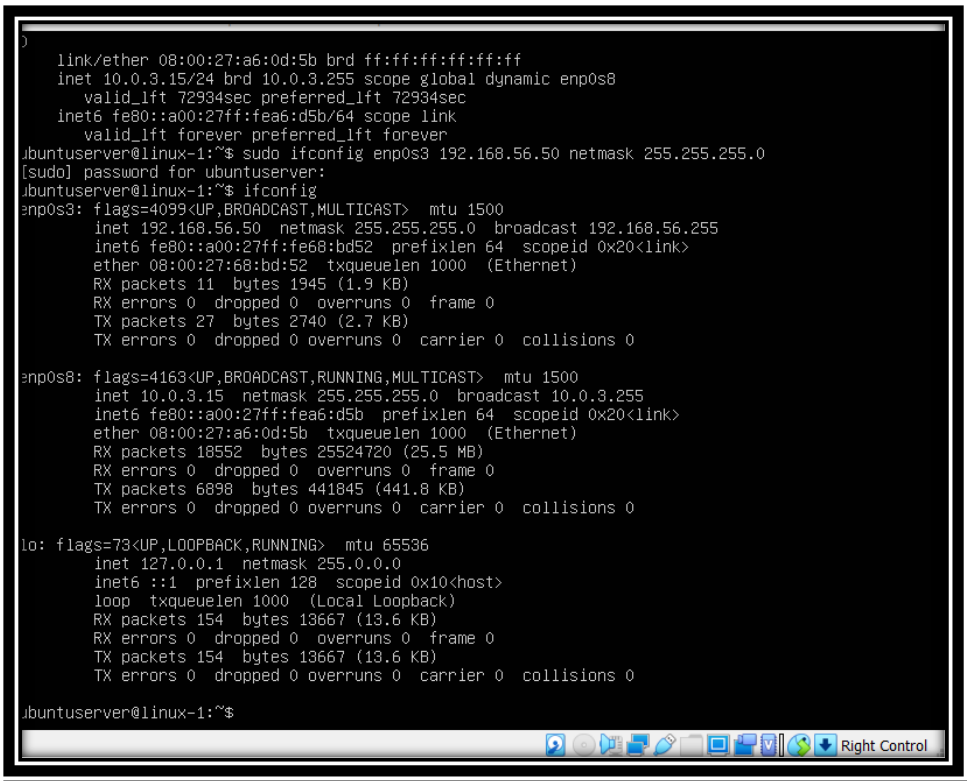


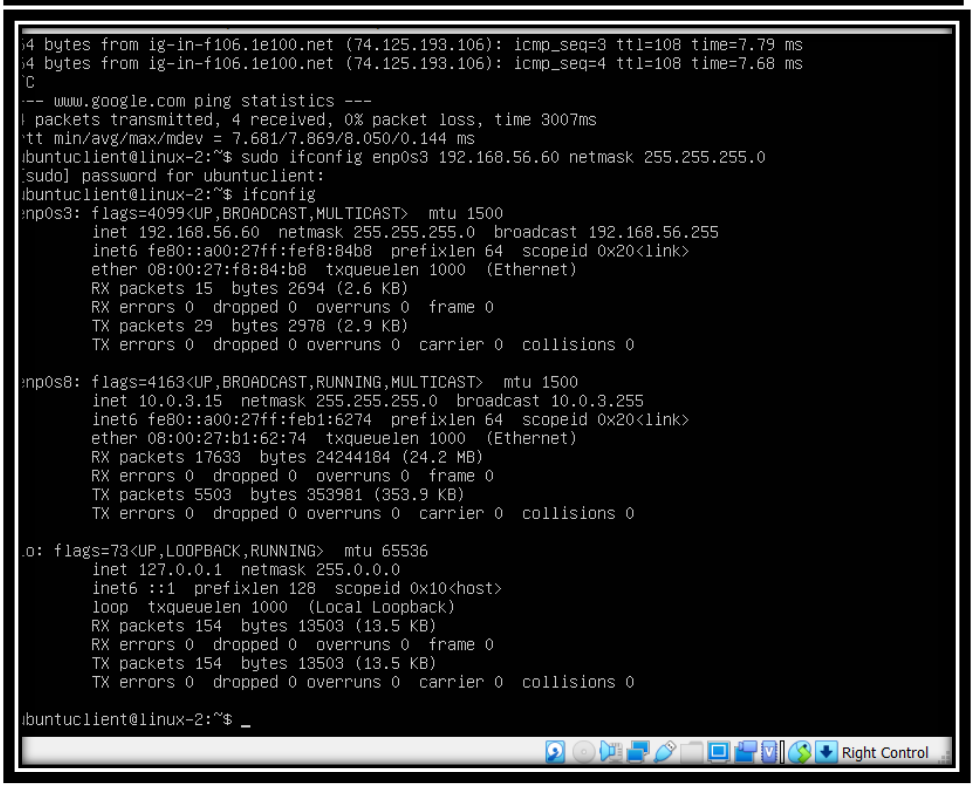
Obtain Linux updates - Update and upgrade the client system.



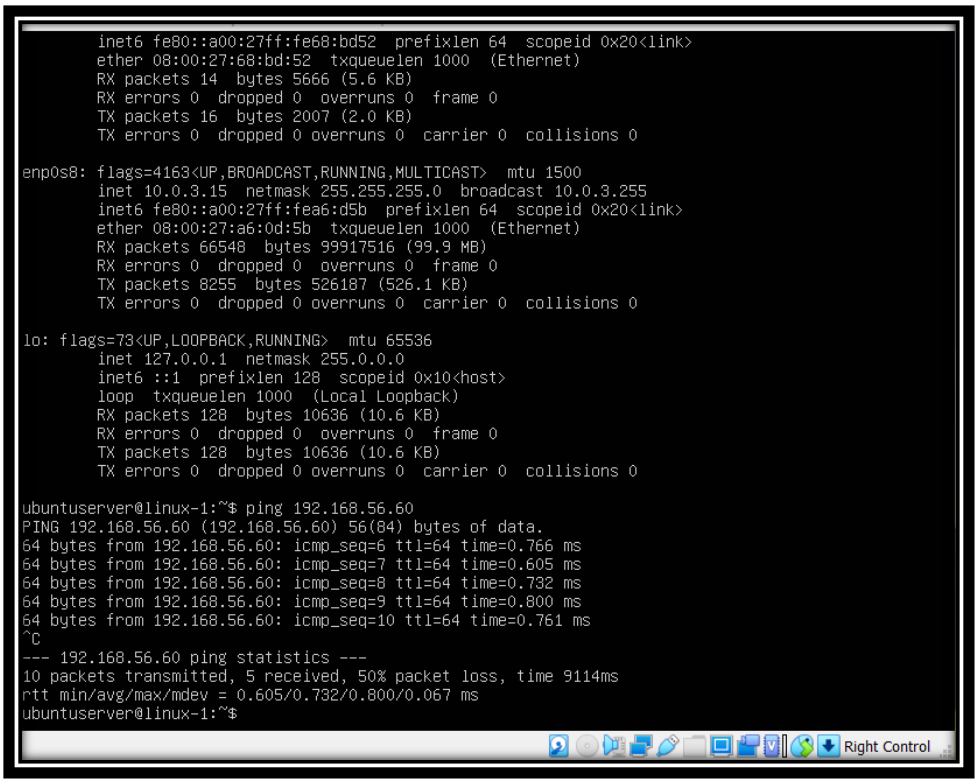


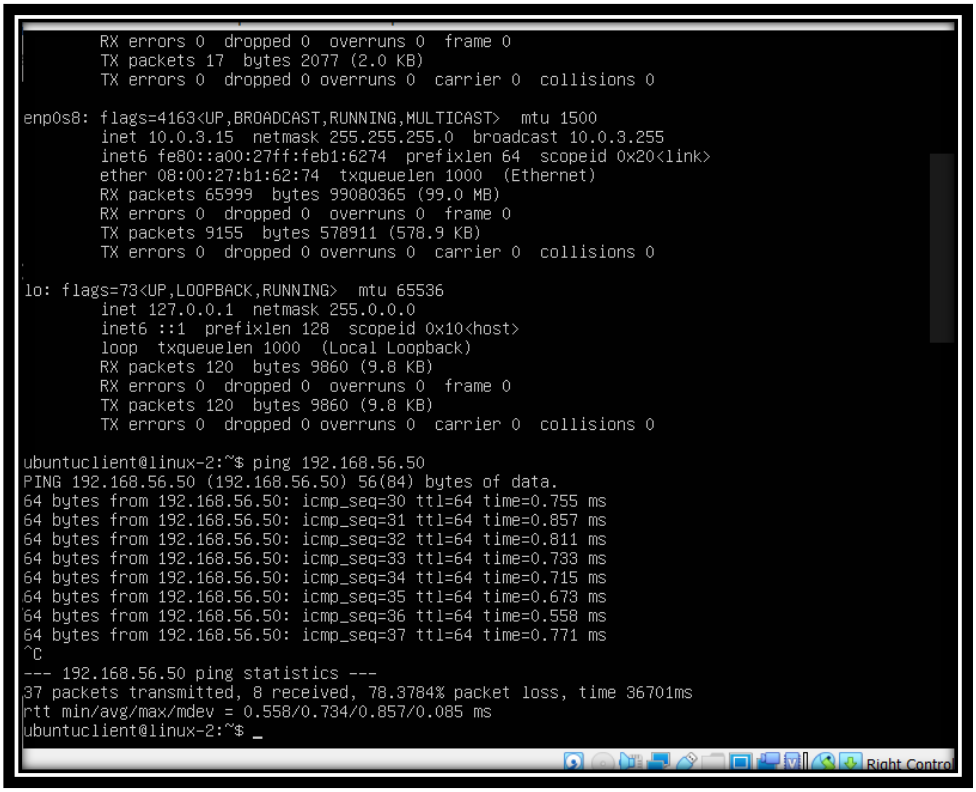
Installing apache2 and lynx on the VM's.



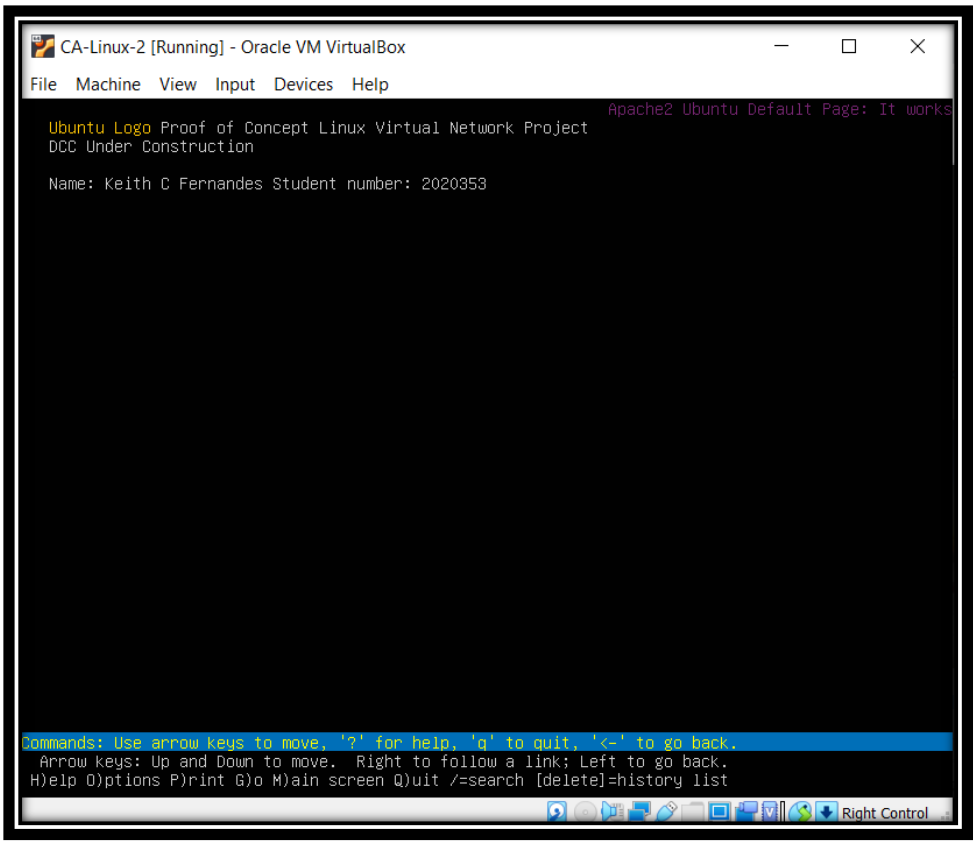


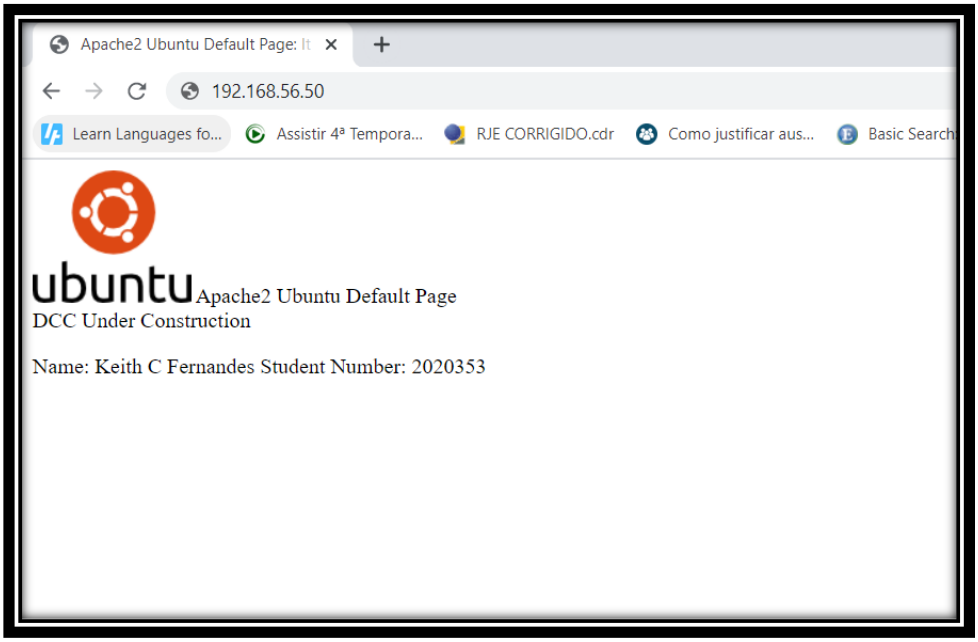
IP’s configured.



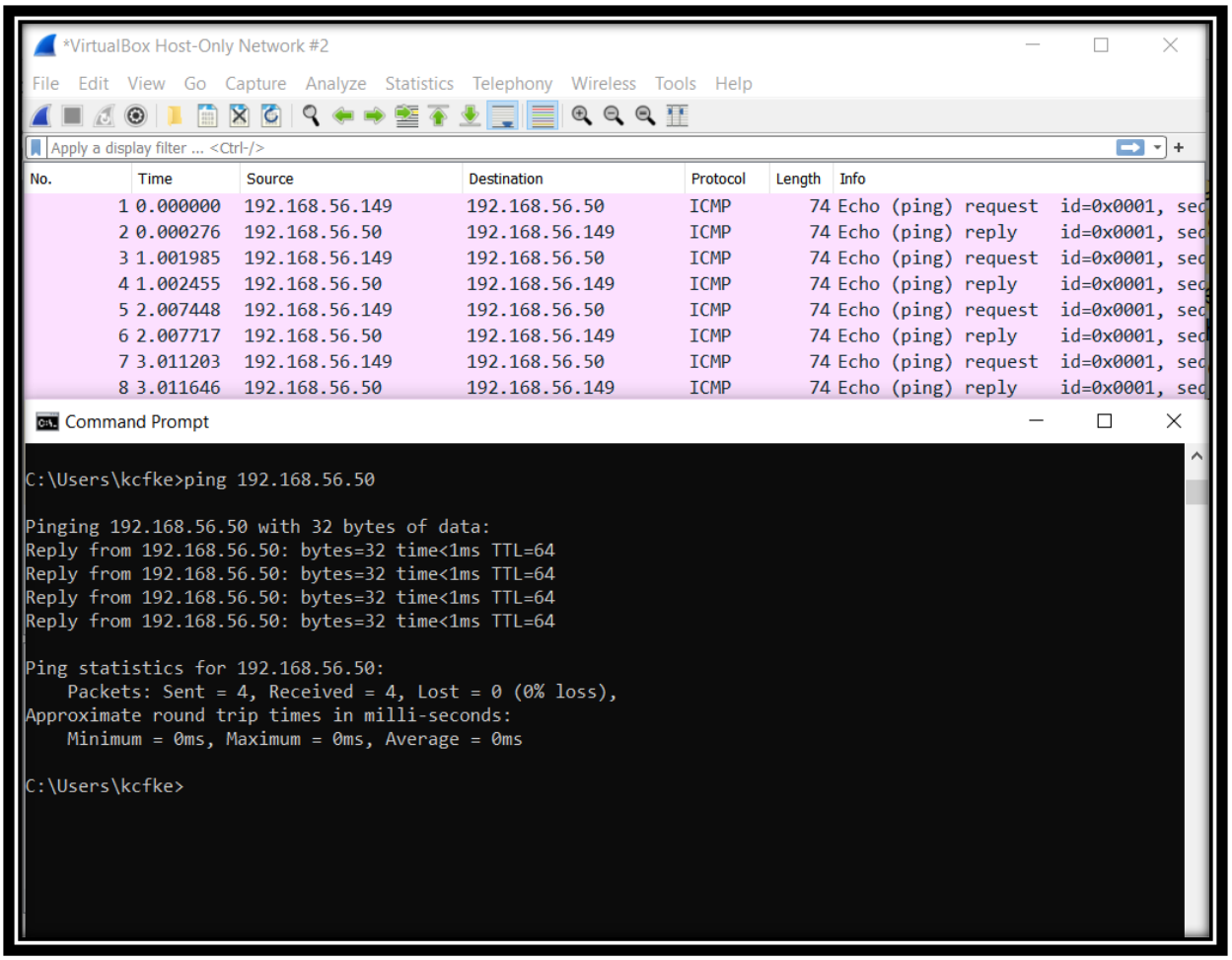


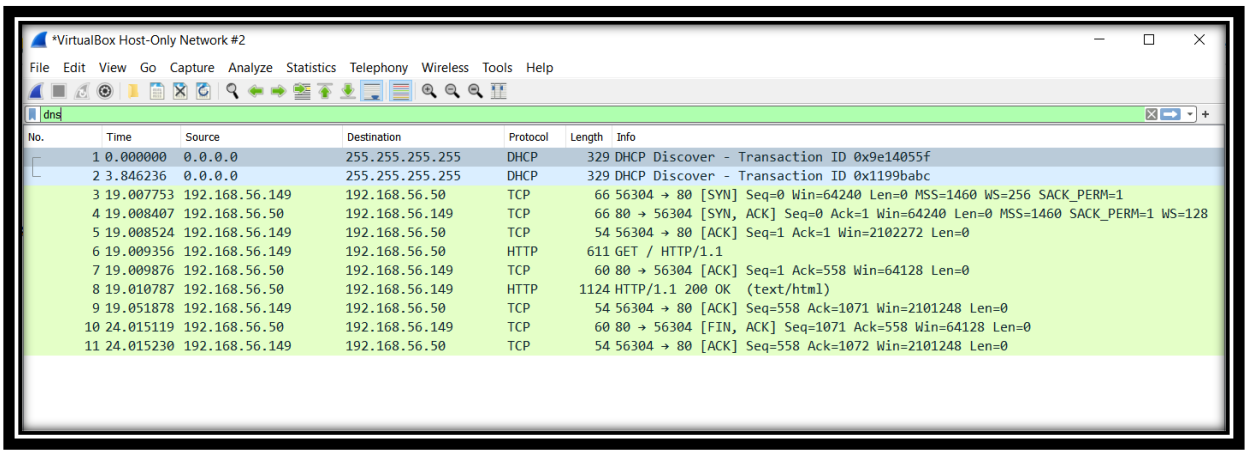
Virtual Machines pinging each other.





Accessing Apache website home page by Client machine and by browser.

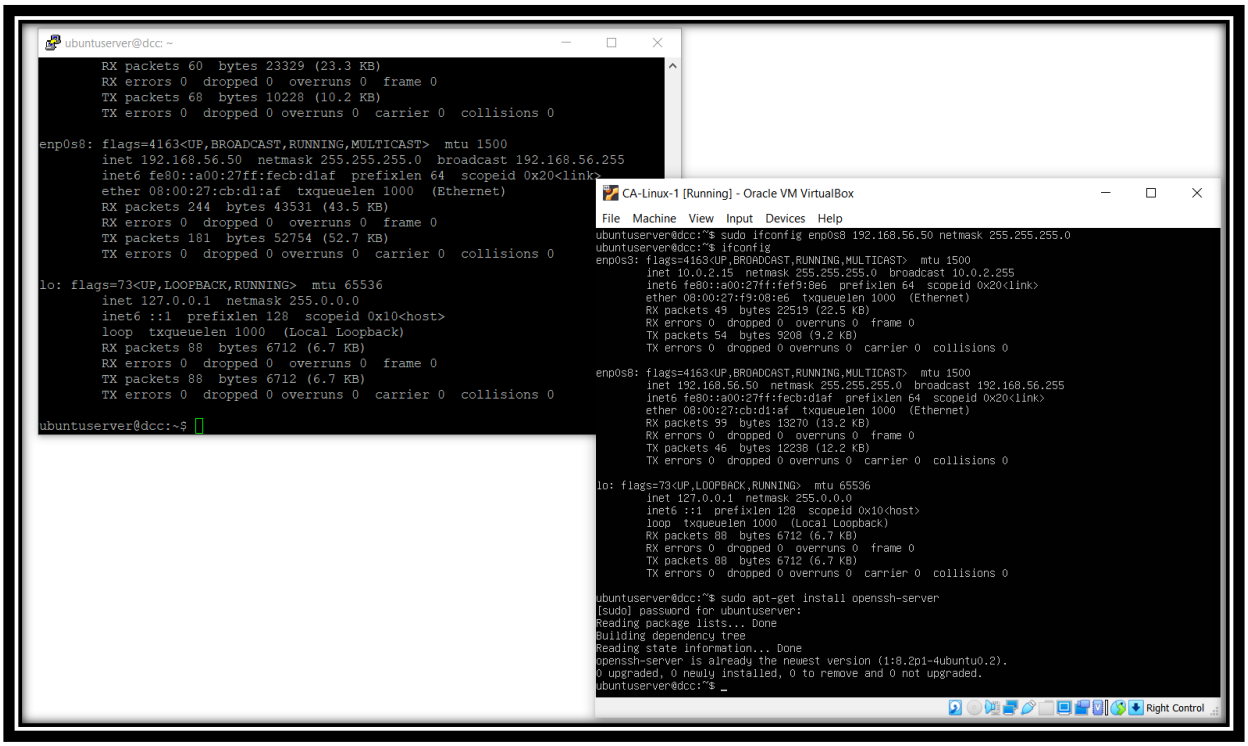




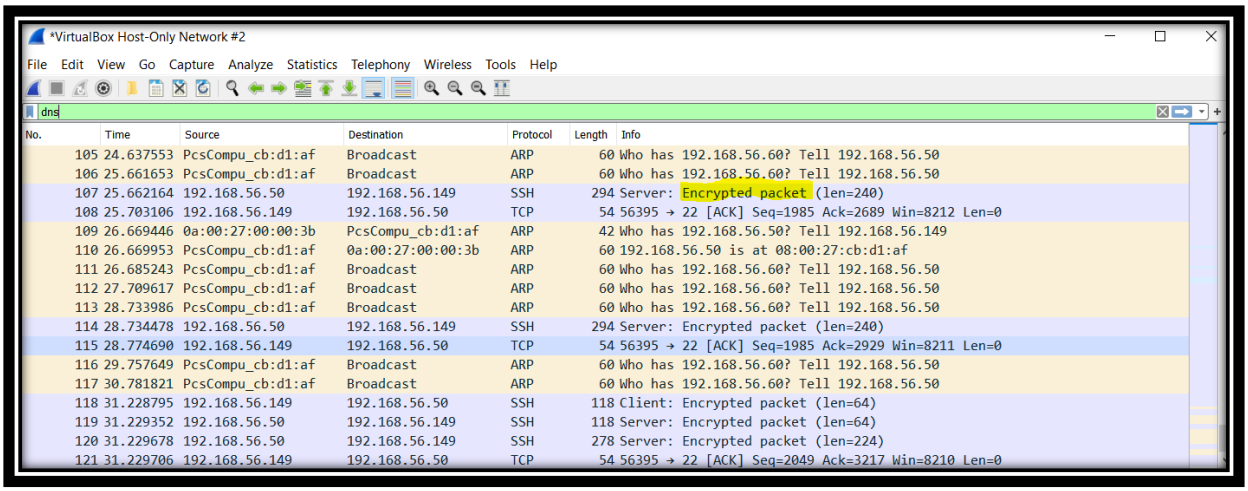
Checking the three-way handshake of Apache website.

Installing OpenSSH.

The OpenSSH is a suite of secure networking utilities based on the Secure Shell (SSH) protocol, which provides a secure channel over an unsecured network in a client–server architecture.



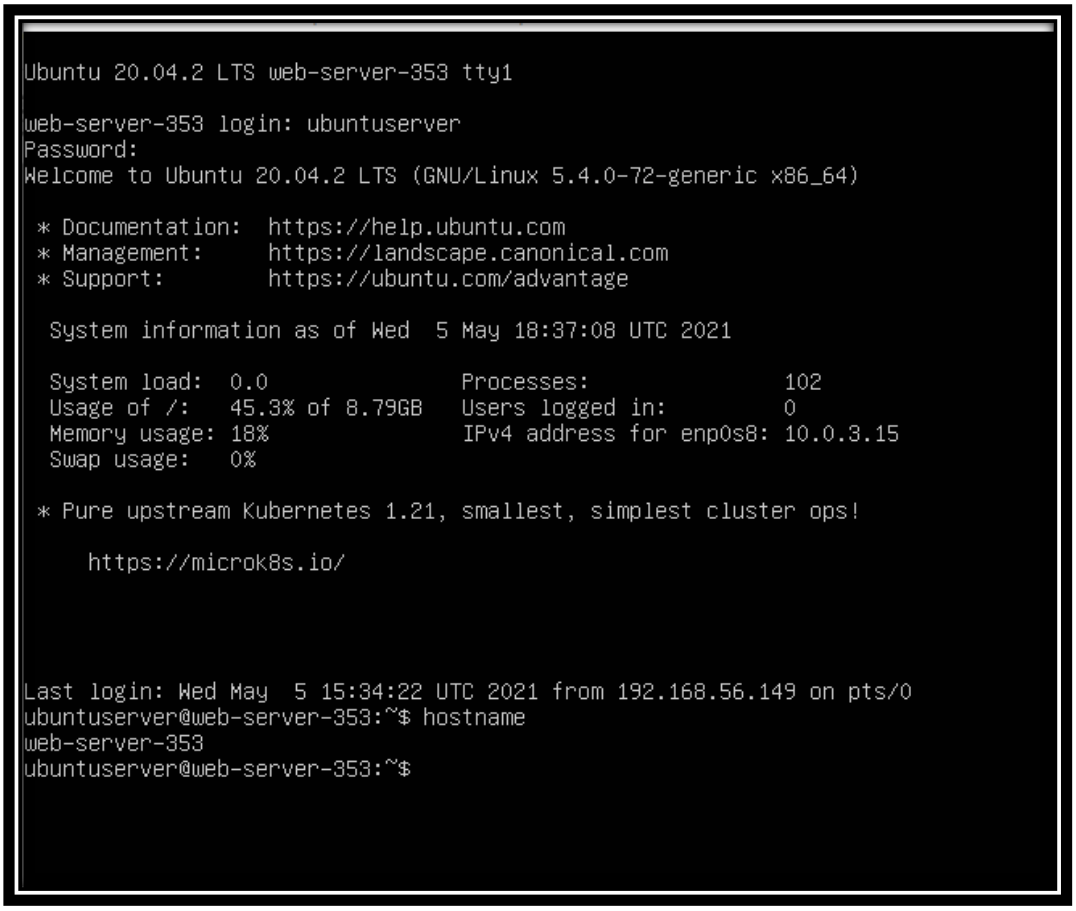
Host operating System logging into the VM by using SSH.

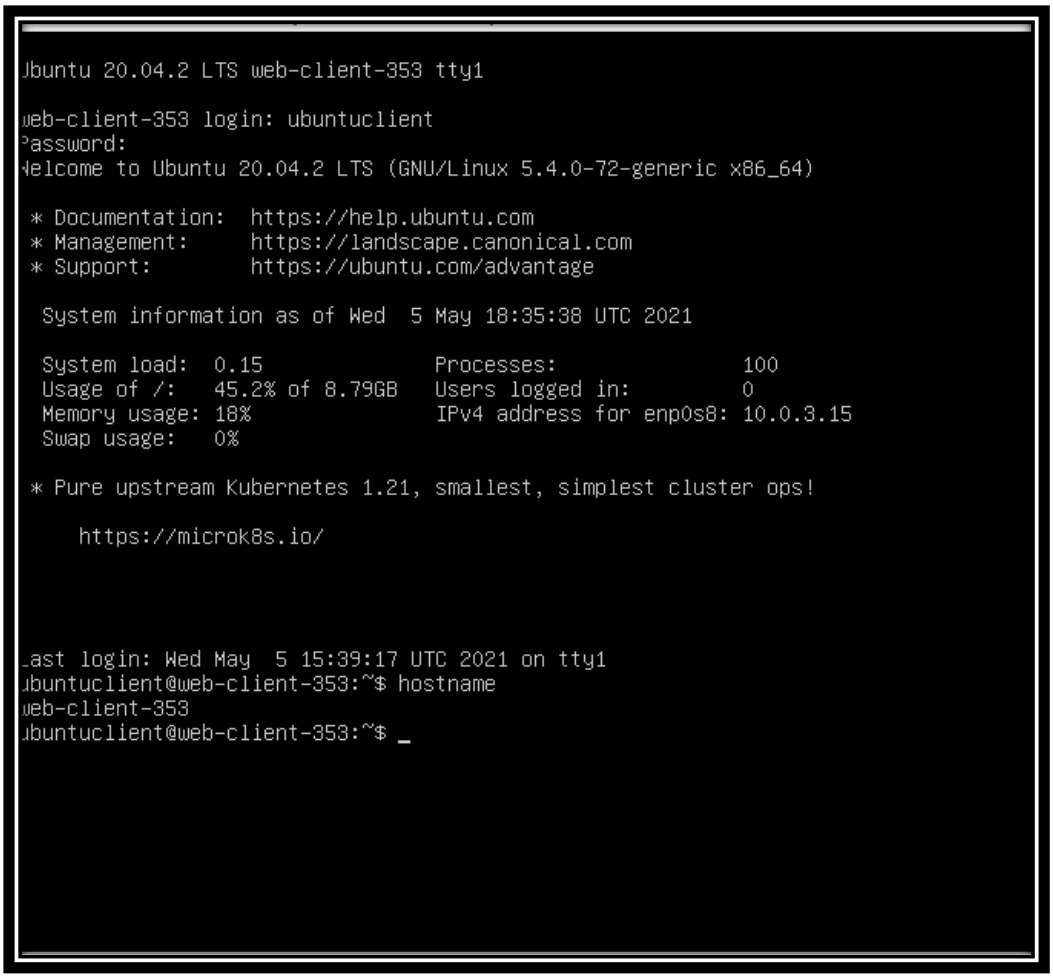


Communication encrypted between them.

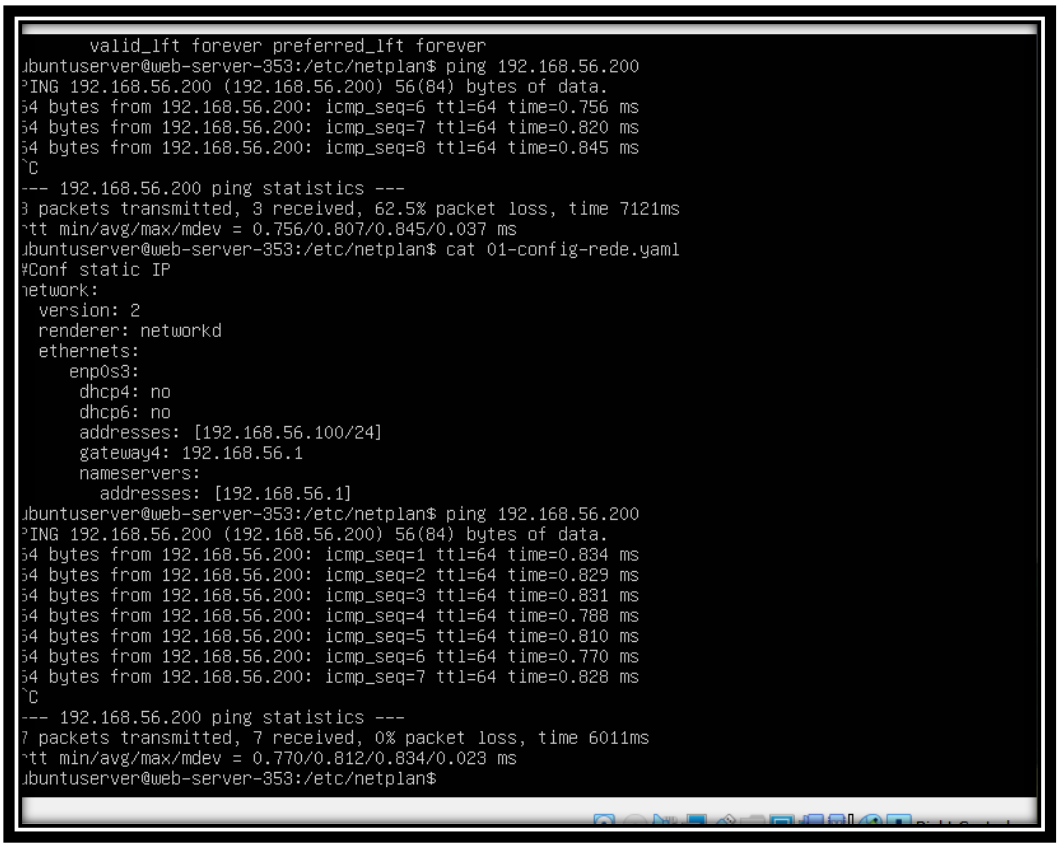
IP Addresses and Hostname Management

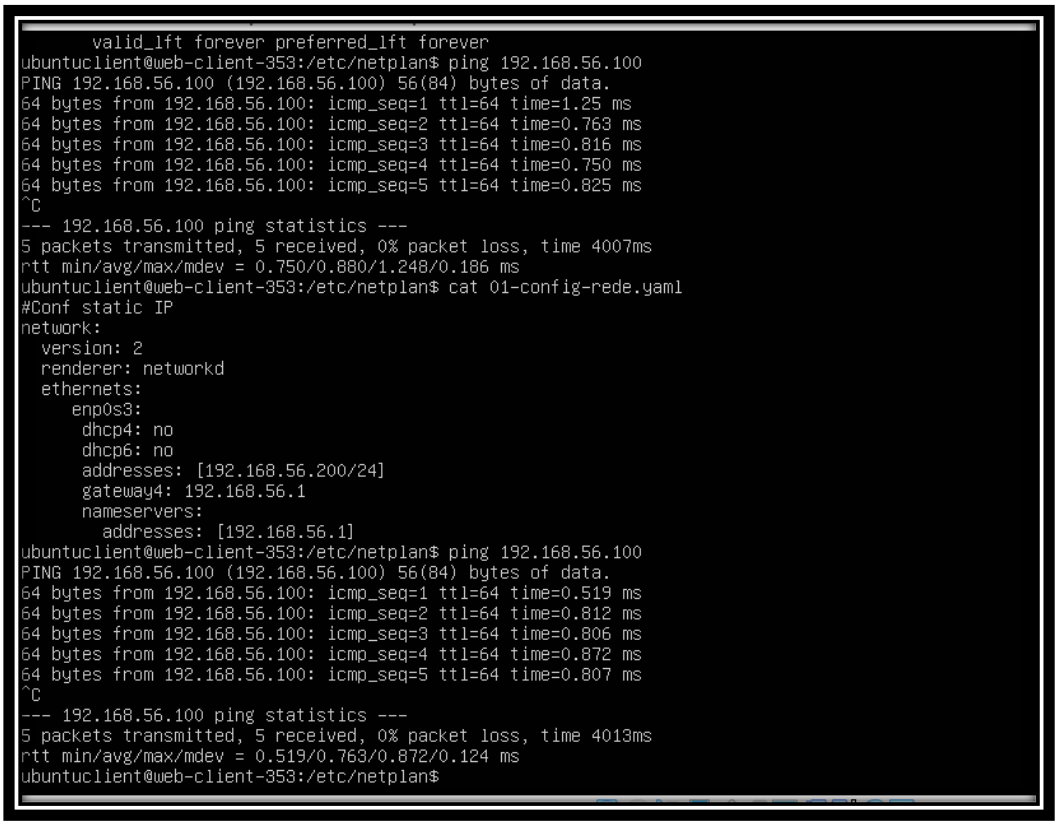
Changing the ephemeral IP to static IP. Such IP addresses are ephemeral, meaning they are bound to the lifetime of the resource they are attached to. Once that resource is destroyed (or stopped, in the case of Compute Engine instances), the IP address is freed, and will eventually be assigned to another resource.





Renaming the hostnames.

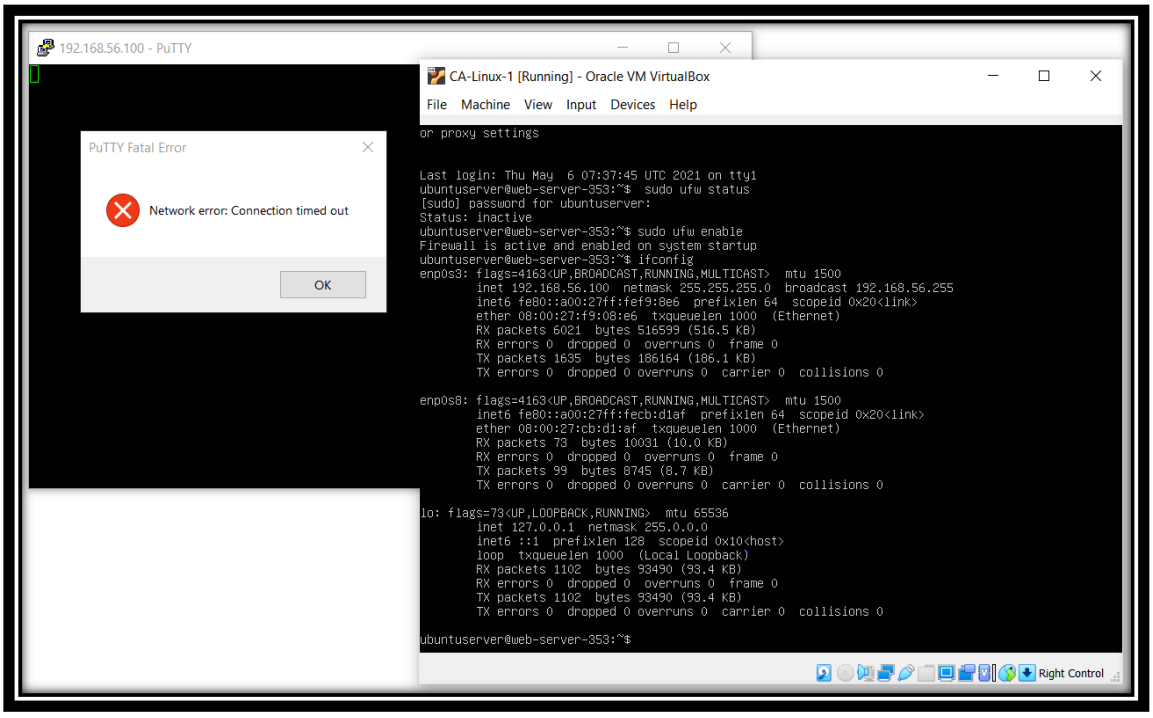


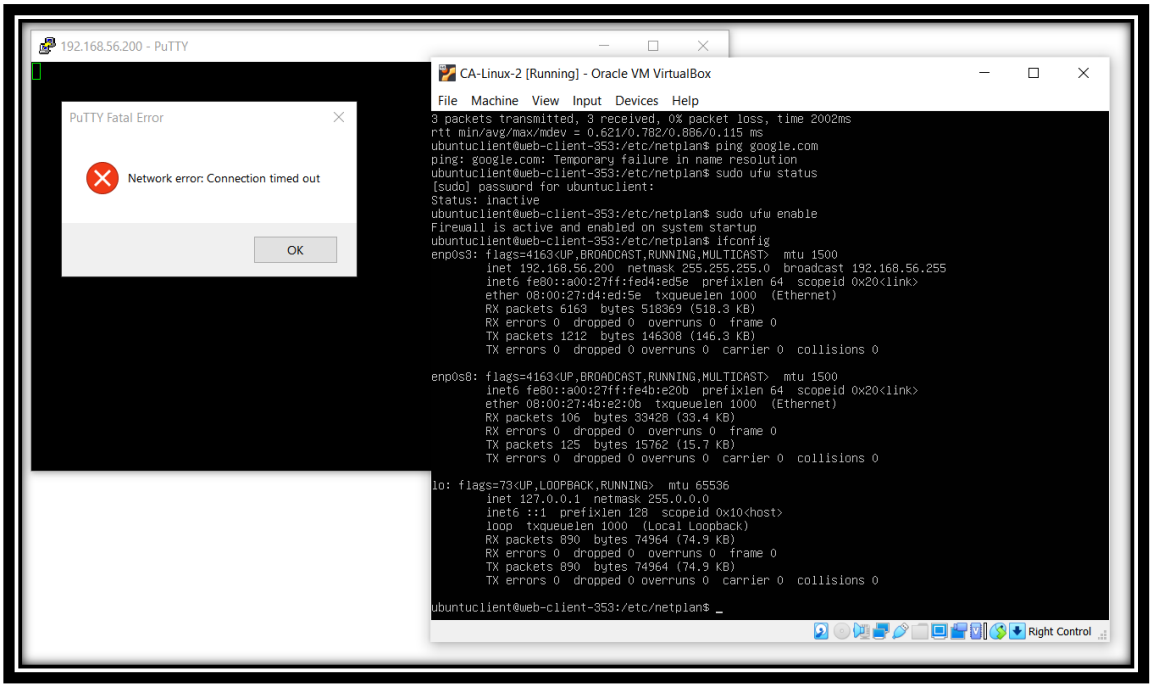


Changing IP address configuration – using netplan. VM's pinging each other.

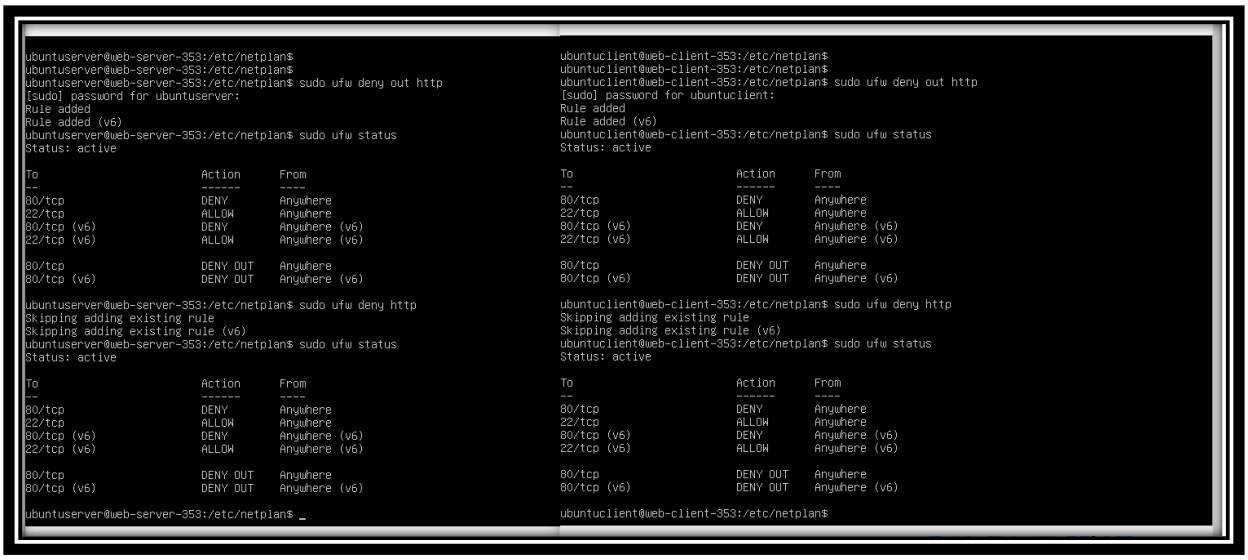
Firewall

A firewall's main purpose is to allow non-threatening traffic in and to keep dangerous traffic out.

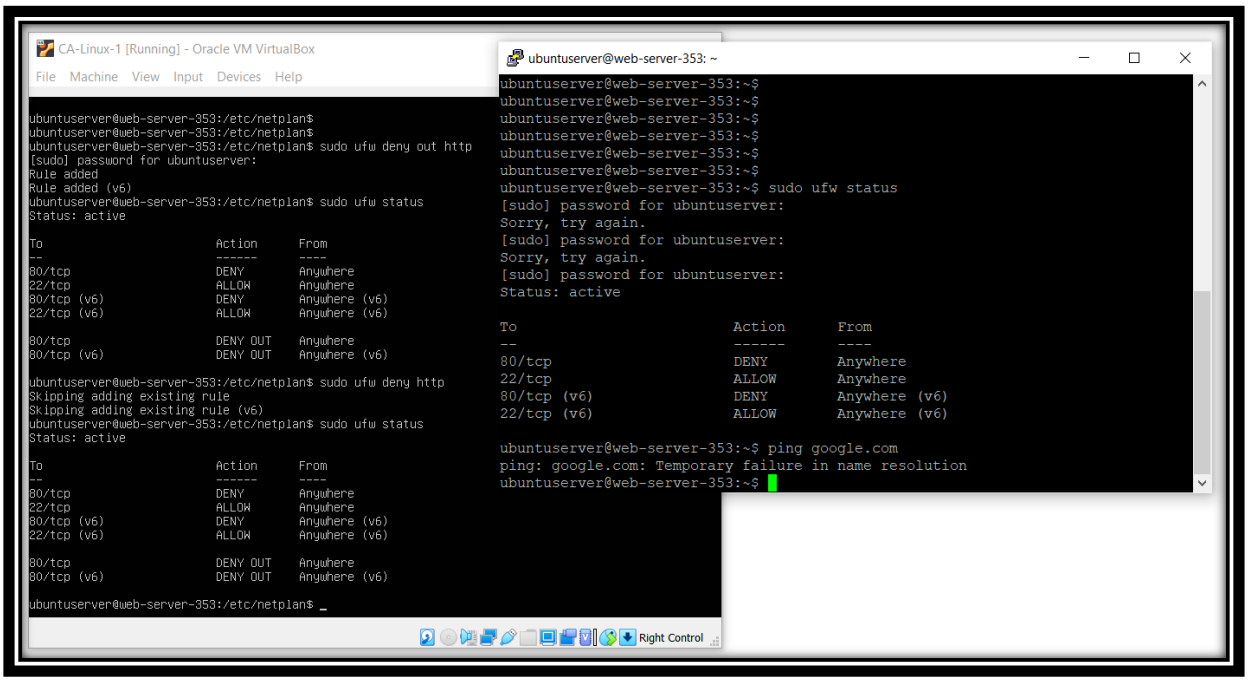




Access by SHH being deny by firewall in server and client machines.

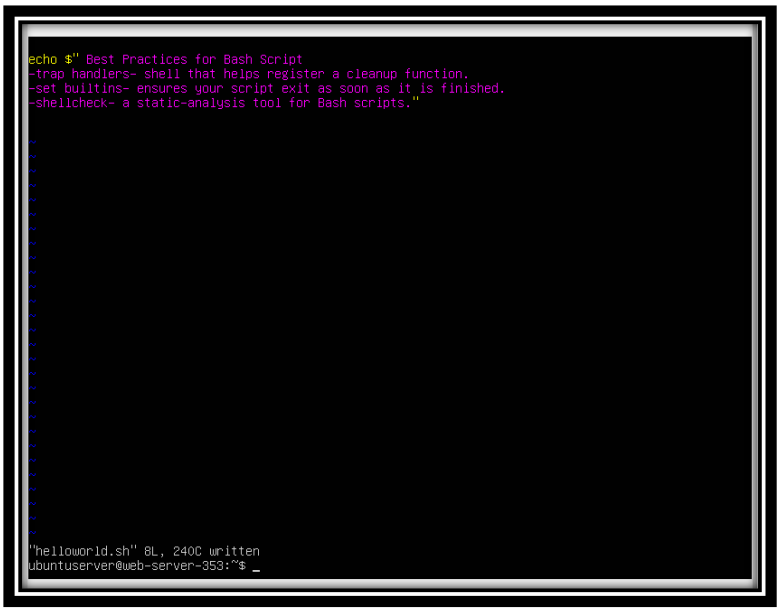


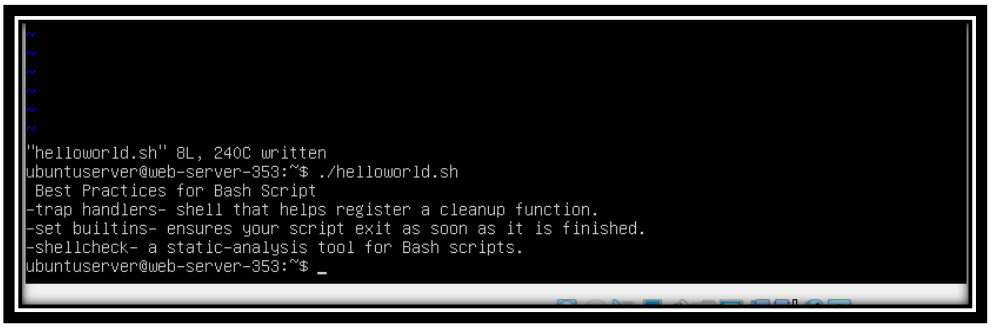
HTTP traffic not permitted.



SSH operating and being allowed while HTTP is not.

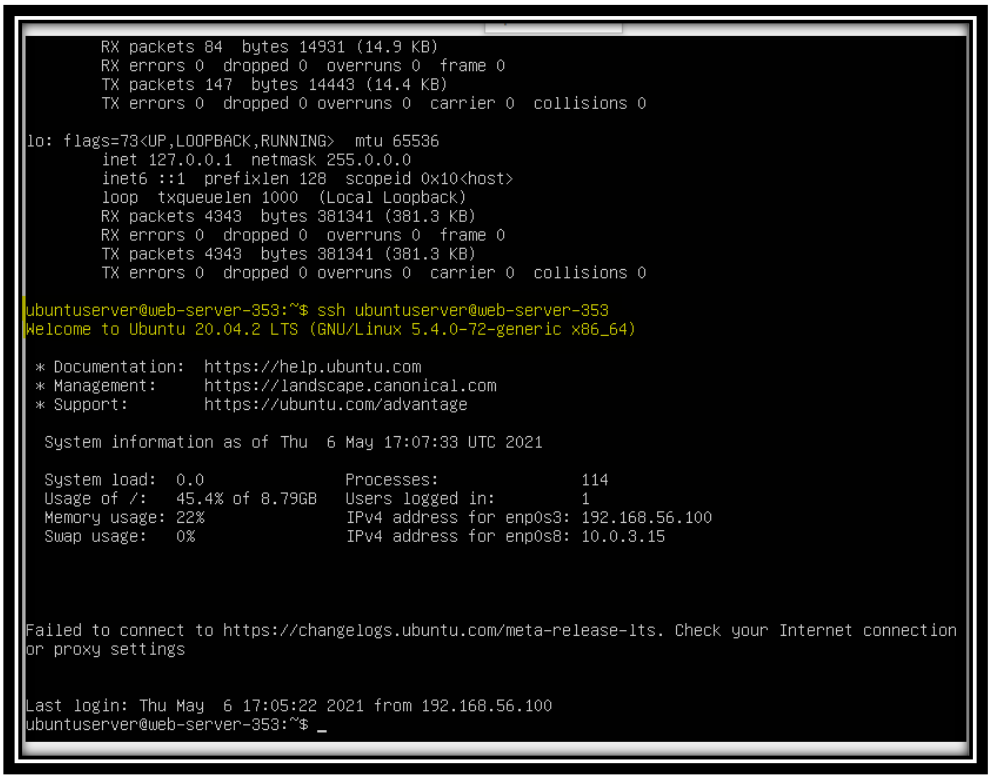
Best practices that you could use to automate the script execution





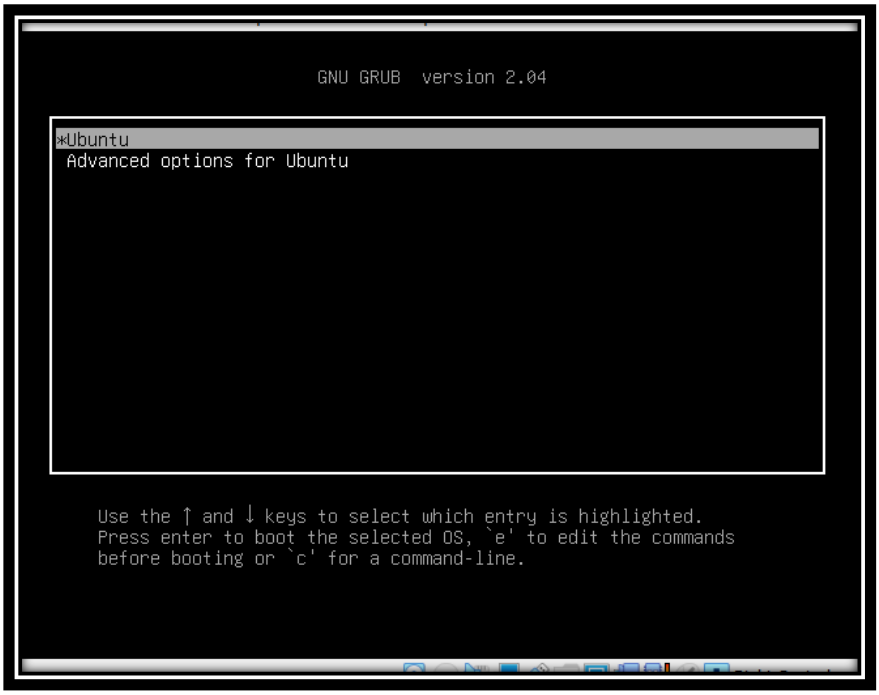
Writing and executing short bash shell.

DCC is exploring new authentication techniques. Allow SSH connections from the web-client using no passwords.

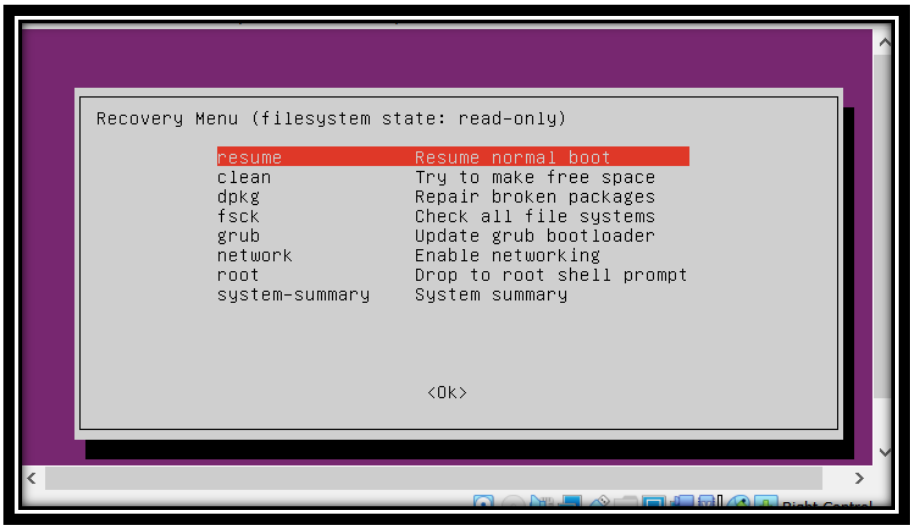


Way to get into a VM by resetting password.

First the machine needs to be powered of and when it turns on after being initialized, we press enter or shift and we can access the ubuntu advanced options.



Then enter, goes to recovery mode and wait.



In this next step we need to choose “root”, then we give the commands:

- mount -rw -o remount /
- passwd <here.goes.user.name>

Then you type your new password, and retype your new password, press enter, and it is updated.

Password updated successfully.

References

https://www.oreilly.com/library/view/google-cloud-platform/9781788837675/1d02f31d-292d-4751-aa14-eb6797ec26b4.xhtml

https://www.checkpoint.com/cyber-hub/network-security/what-is-firewall/

https://www.hostinger.com.br/tutoriais/conexao-ssh-sem-senha

https://canaltech.com.br/linux/Introducao-ao-Shell-Script/

https://www.youtube.com/watch?v=kIbyaBPm-2Y