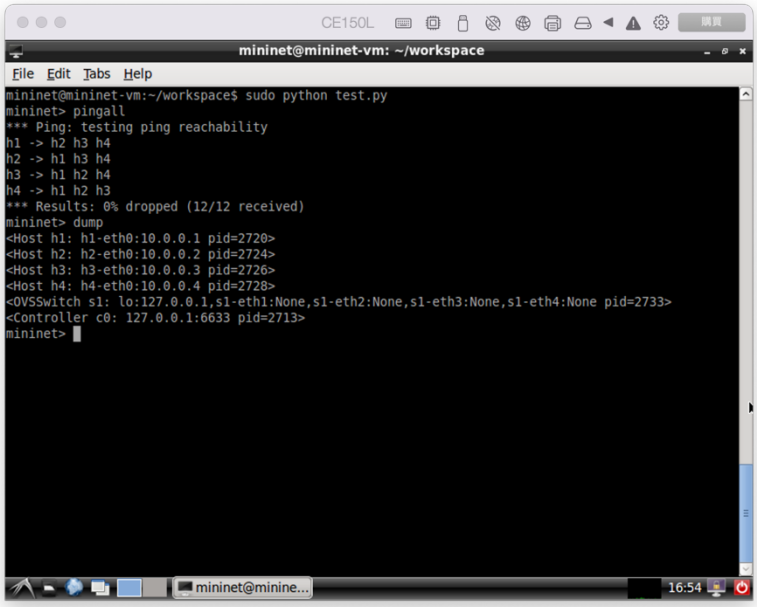
1. You can use `groups` command in Linux terminal to check which groups you are a member of. (Link: How to List Groups in Linux | Linuxize)
2. "$?" will hold the output of the last code run by Linux.
3. The Ctrl + Z key combination does this. (Link: shell - How to suspend and bring a background process to foreground - Unix & Linux Stack Exchange)
4. `hostnamectl` can do this. (Link: How To Find Which Linux Kernel Version Is Installed On My System - nixCraft (cyberciti.biz))
5. In Linux, "." refers to the current directory, and ".." refers to the parent directory of the current directory. "~" is a Linux "shortcut" used to
represent a user's home directory. Therefore, "~/" is the beginning of the file or directory path under the user's home directory. When / is preceded by nothing, it refers to the root directory. (Link: shell - What is the difference between ~ and / in paths - Unix & Linux Stack Exchange)
6. PID is a unique identifier given to every process running on Linux. If it is necessary to find the pid of a process, the "ps" command can be used. (Link: How to Find the PID of a Linux Process With pidof or pgrep (howtogeek.com))
7. This command can display the user's name and their default shell: cat /etc/passwd | awk -F: '{print $1 " " $NF}' (Link: How To Find The Default Shell For A User Account In Linux – Systran Box)
8. The su command will switch directly to the root account, while the sudo command will only execute a command as root.(Link: What's the Difference Between Sudo and Su in Linux? (howtogeek.com))
9. First, you need to enter "crontab -e" in the terminal and press Enter. Then you can see the cron configuration file. Then slide to the bottom and type "/30 * * * * /path/to/your/script". In this case, the Linux system will run the file pointed to by /path/to/your/scrip every 30 minutes. (Link: How to Run a Script at a Certain Time on Linux | Baeldung on Linux)

Lab 1:

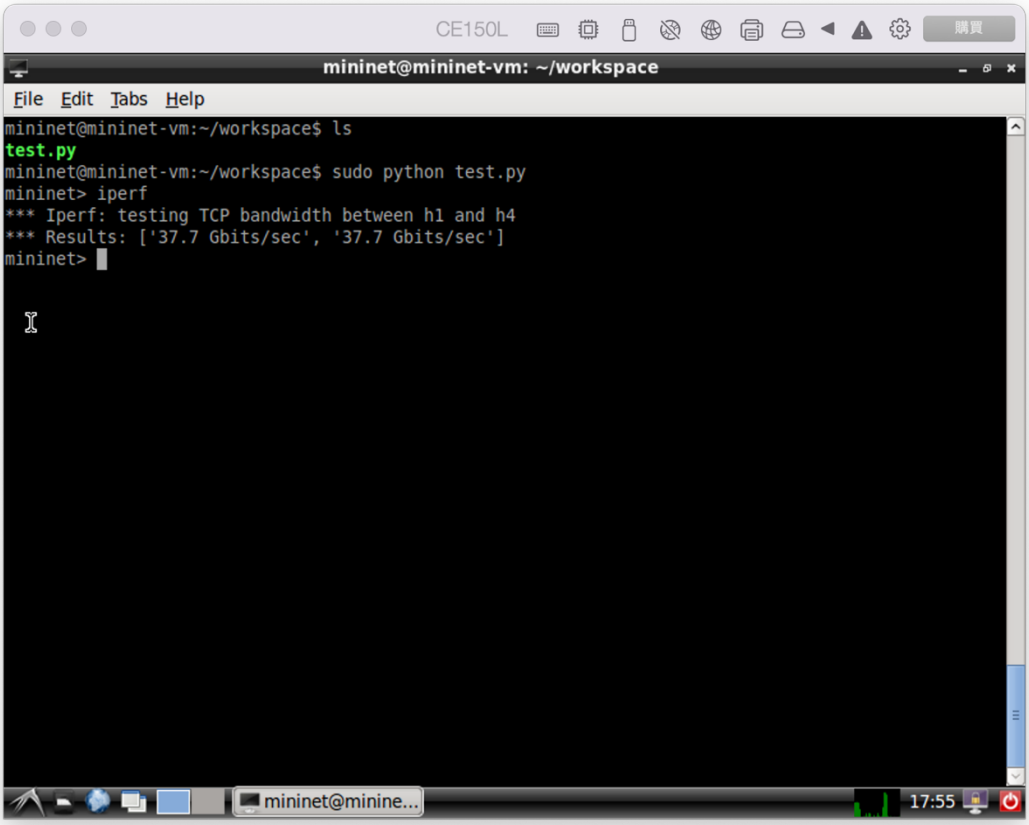
2.



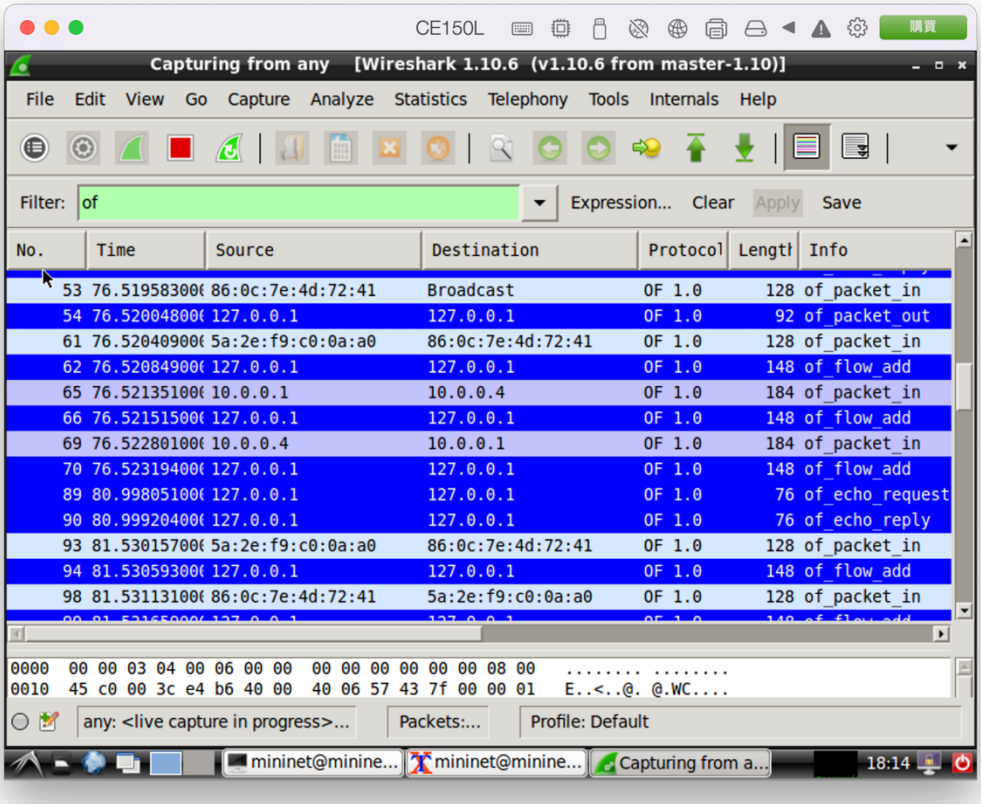
The pingall command seems to be used to detect the connection between hosts. In terms of the situation in the figure, the four hosts have been successfully connected to each other. At the same time, all hosts received data packets from other hosts (a total of 12). No data is lost in this operation (0% dropped).

There is only one switch in this network. The switch has the following information: the IP address of the loopback interface. and the name and status of the switch's Ethernet interface. Like the previous four hosts, the switch also has a unique Pid.

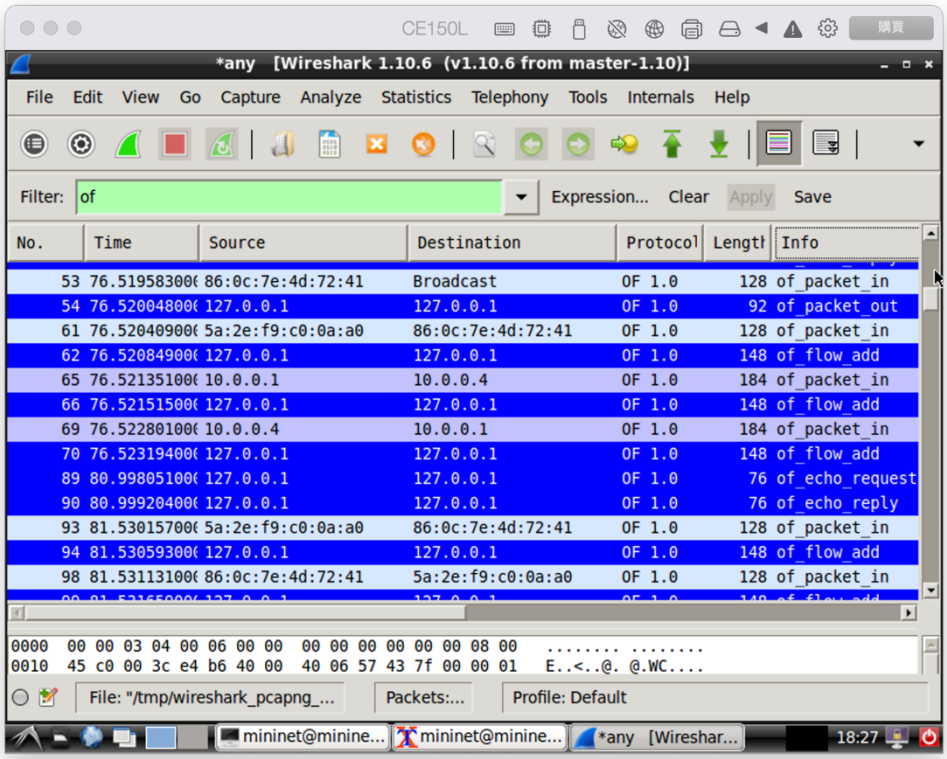
3.



IPerf is used to test the TCP bandwidth between hosts. According to the picture, the output bandwidth value is 37.7 Gbits/SEC. Two of the same number indicate that in the two directions, the TCP bandwidth speed is 37.7 Gbits/SEC.

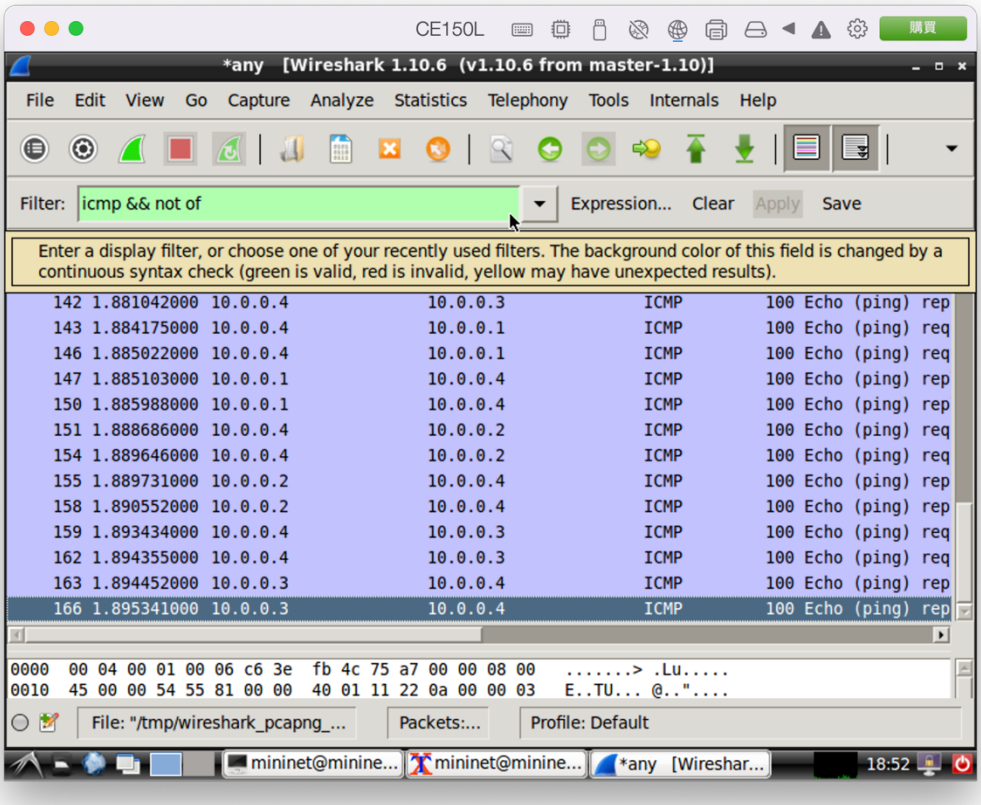


4 (1): According to the graph above, there are 6 messages showed up with "of_packet_in"



(II): According to the picture above, there are 6 messages with “of_packet_in”. Two of them can be applied in this issue. The Destination is 10.0.0.1, and the source is 10.0.0.4. The other Destination was 10.0.0.4, and the source was 10.0.0.1. I only found one Entry with "of_packet_out". Its Source and Destination are 127.0.0.1.

(III):



Although there is no way to directly display it through the graph, after I counted them one by one, I found that the total number is 48. There are two types of ICMP packets, Echo request and Echo reply.