

NASA HWO

Deadline: 2/27(三) 23:59

繳交方式:

將 part1, part2, part3 的答案存成一個 pdf 檔，並將 part3 的 pcapng 檔用自己的學號命名(學號.pcapng)，將 pdf 檔與 pcapng 檔打包成 zip 檔後上傳至 CEIBA

Part 1

In the class, we have talked about the functionality of the transport layer. One of the protocols that carry out some of these functionalities is called TCP. In this problem, we ask you to find out how to list all the TCP connections (transport layer end-to-end “links”) established on one machine. We will also ask you to list the entries in the routing table, which is used to find out the path to the destination host on the Internet.

- a) Please connect to one of the Linux workstations in our department using SSH. (linux[1-21].csie.ntu.edu.tw) Explain briefly what software you use and how you connect to the workstation.
- b) Find out what command to use in order to list all on-going TCP connections on this workstation. Please write down the command. (Yes. You are expected to use Google to look for the answer). Copy and paste the relevant part of the response from the command you issued to the workstation, showing the information of all TCP connections.
- c) Pick one of the TCP connections that you get in b) and explain what the value of each field represents.
- d) Execute command ‘route’. This command will show the routing table of the machine. A routing table contains a couple of entries specifying the next host that the packet should be forwarded to when the destination IP address of that packet matches the IP range in a particular routing table entry. Copy and paste the output of the command and briefly explain what each entry in the output routing table is for (and, of course, you probably need to figure out what these fields in the table means: “Destination, Gateway, Genmask, Flags, and Iface”. Google is your friend. ☺)

Part 2

假設企業申請了一段 Class C IP，210.74.210.0 (Class C)提供給企業六個部門使用

- a) 請問在最大效益的使用率下，該借用幾個 Host ID 用作 Subnet ID？
- b) Subnet Mask 為多少？
- c) 每個網段最多可提供主機使用的 IP 數量為何？

Part 3

- a) 請於任何可上網的電腦執行 WireShark，抓取 30 秒的紀錄，並使用指令，篩選出 IP “來源 IP 自己，通訊協定為 TCP”。請寫下指令並將檔案用自己的學號命名 (學號.pcapng)