

Homework #6

Due Time: 2015/6/8 (Mon.) 17:00

Contact TAs: vegetable@csie.ntu.edu.tw

Submission

- Compress all your files into a file named “**<studentID>.zip**”, which contains two folders named **StudentID_NA** and **StudentID_SA** respectively.
- Folder **StudentID_NA** should contain a pdf file of all your answers in *Network Administration Part*.
- Folder **StudentID_SA** should contain a pdf file of all your answers in *System Administration Part*, and the file you got from NFS server.
- **Submit your zip file to ceiba.**

Instructions and Announcements

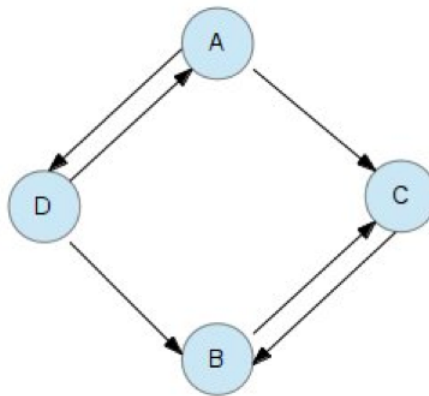
- Discussions with others are encouraged. However, you should write down your solutions **in your own words**. In addition, for each problem you have to specify the references (the Internet URL you consulted with or the people you discussed with) on the first page of your solution to that problem.
- Problems below would be related to the material taught in the class and might be far beyond that. Try to search for additional information on the Internet and give an reasonable answer.
- Some problems below might not have standard solution. We would give you the point if your answer is followed by reasonable explanations.
- If you get stuck in problems below, feel free to contact TAs.
- **NO LATE SUBMISSION IS ALLOWED.**

Network Administration

How CSMA works

Below is a graph describing a scenario consisted of 4 APs. The AP is represented by a node, and the directed edge means the transmission (and of course, the interference) range from AP x to AP y . Edge (x, y) indicating that the signal sent from x can be received by y . Please answer the following question according to the scenario.

Figure 1: Wireless Scenario



1. Please give an example of **Exposed Terminal** in this scenario.
2. Please give an example of **Hidden Terminal** in this scenario.
3. Please give an example of **Spatial Multiplexing** in this scenario.

Access Point

1. In which stack of **Internet Protocol Stack** do fat APs and thin APs provide different services?
(More than 1 answer is allowed)
2. Which of the following devices can **NOT** be implemented by an AP of single antenna and single WAN/LAN port? Please explain your choice.
a) Wireless router b) Wireless switch c) Wireless hub d) Wireless NAS.
3. Which of the following settings is invalid under normal environment? (May still work) Please explain your choice.
a) SSID=CSIE b) Auth=WPA2_Personal c) WAN_IP=192.168.2.2/24 d) LAN_IP=140.112.30.21/24

System Administration

Questions about the NFS

Write down the answer in a PDF file named as StudentID.pdf(e.g. b00902001.pdf).

1. Remote procedure call(RPC) is an important service that participate in the NFS server, please explain what RPC is and how RPC cooperate with NFS server.
2. Suppose that you are responsible with the maintenance of an NFS server, and you receive an requirement that want you to share the directory `/n/sharefile/` to another server with the following setting:
 - a. The permission of `/n/sharefile/` is read-write.
 - b. Allow the root on another server access `/n/sharefile` with the permission of root rather than `nfsnobody`.
 - c. Disable a routine of NFS that verifies whether a file requested from the client is in the appropiate part of volume.

Please describe how to accomplish this requirement with NFS service.

3. In CSIE workstation, user can do their work on different machine via NFS server mounted on workstation. It is time-wasted if we need to mount NFS server manually when we have to restart the workstation. Actually we can let workstation mount NFS server **automatically** via **autofs**. Please describe how to do the task 3 via autofs.