

Homework #6 Solutions

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

1. An active transmission pair : A as Tx and D as Rx. Note that when B wants to start a transmission with C , it will receive the CTS signal from D , and terminate the transmission; however, this transmission will not affect D . (Of course still cause collision in C , but not discussed here)
2. An active transmission pair : C as Tx and B as Rx. Note that when D wants to start a transmission with A , it will **NOT** receive the CTS signal from B , and start the transmission, causing collision in B .
3. 2 active parallel transmission : First one A as Tx and C as Rx. Second one D as Tx and B as Rx.

Access Point

1. All reasonable answer is acceptable:
 - (a) Network Layer : FAT AP do routing and NAT while thin AP do not.
 - (b) Application Layer : FAT AP may act as firewalls while thin AP do not.
2. Wireless switch: AP cannot do directional transmitting (avoid broadcast according to mac-address table) with single antenna.
3. LAN_IP=140.112.30.21/24 : this IP is located in public domain, allowing such IP in LAN may cause confusion in gateway.

System Administration

NFS Client

In this part, you are required to build an NFS client, connect to an NFS server, download specific data from server and submit it. you should connect the server via CSIE workstation(linux1, linux2, ..., linux20).

Requirement

- 1 IP of NFS server: TBA.
- 2 The directory you should access on NFS server: /nasa_nfs/.
- 3 NFS client: CSIE workstation(linux1, linux2, ..., linux20)
- 4 After you successfully connect to NFS server, go to the subdirectory named with your student ID, download the file to your local site, you need to submit this file along with your answer sheet. **Do not modify the filename and the content of the file.**

Questions about the NFS

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

1. Please write down how you establish the NFS client.
2. 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.
3. 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.

Referenced Solution

- 1 Remote procedure call is an inter-process communication that allows a process to call a procedure on another computer via network. Since the port used by NFS server is randomly chosen, NFS service will register its port to RPC, then any user who want to use the service of NFS will send the request to RPC port, after RPC find the correct port of NFS, user can connect to NFS daemon directly.
- 2 Modify /etc/exports: /n/sharefile/ -rw,no_subtree_check,no_root_squash CLIENT_IP. Then type "exportfs -a".
- 3 http://linux.vbird.org/linux_server/0330nfs.php#nfsclient_autofs