

Homework #4 Solutions

Due Time: 2015/5/11 (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 all files in *System Administration Part*.
- 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

Please briefly answer the following questions.

1. 寫出一種設定此eth1網路介面的指令 (ifconfig, route, ip...)。

eth1 (未啟動)

ip: 192.168.30.1

netmask: 255.255.255.0 (/24)

default gateway: 192.168.30.254

```
ifconfig eth1 192.168.30.1 netmask 255.255.255.0
```

```
route add default gw 192.168.30.254
```

2. 使用 tracert 或 traceroute 搜尋從你的機器到 google DNS (IP: 8.8.8.8)的路徑,貼上指令列(使用的指令)及程式輸出結果。

```
[12:31] b01902050@linux6:/home/student/01/b01902050> traceroute 8.8.8.8
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
 1  10.254.254.254 (10.254.254.254)  1.297 ms  1.595 ms  1.919 ms
 2  140.112.149.121 (140.112.149.121)  0.335 ms  0.403 ms  0.521 ms
 3  140.112.0.214 (140.112.0.214)  0.809 ms  0.950 ms  0.982 ms
 4  140.112.0.186 (140.112.0.186)  0.767 ms  0.855 ms  0.944 ms
 5  140.112.0.198 (140.112.0.198)  1.606 ms  1.739 ms  1.365 ms
 6  140.112.0.34 (140.112.0.34)  1.323 ms  1.537 ms  1.628 ms
 7  72.14.196.229 (72.14.196.229)  1.880 ms  2.107 ms  1.934 ms
 8  209.85.243.30 (209.85.243.30)  6.447 ms  72.14.233.20 (72.14.233.20)
    9.159 ms  5.269 ms
 9  209.85.252.213 (209.85.252.213)  5.339 ms  209.85.252.161 (209.85.252.161)  5.243 ms
    209.85.242.163 (209.85.242.163)  5.743 ms
10  209.85.243.21 (209.85.243.21)  9.916 ms  209.85.249.75 (209.85.249.75)  4.951 ms
    209.85.248.241 (209.85.248.241)  5.091 ms
11  * * *
12  google-public-dns-a.google.com (8.8.8.8)  5.481 ms  5.319 ms  6.738ms
[12:33] b01902050@linux6:/home/student/01/b01902050>
```

3. 使用 dig 指令練習查詢系上網域 (csie.ntu.edu.tw)的 DNS MX 紀錄以及管理此網域的 DNS 主機ip,貼上指令列 (使用的指令)及程式輸出結果。

```
[17:57] b01902050@linux6:/home/student/01/b01902050> dig -t mx csie.ntu.edu.tw
;; ANSWER SECTION:
csie.ntu.edu.tw.      600      IN       MX       2 ms.csie.ntu.edu.tw.
csie.ntu.edu.tw.      600      IN       MX       1 ms.csie.ntu.edu.tw.
;; ADDITIONAL SECTION:
ms.csie.ntu.edu.tw.  600      IN       A        140.112.30.68
[17:57] b01902050@linux6:/home/student/01/b01902050> dig -t ns csie.ntu.edu.tw
;; ANSWER SECTION:
csie.ntu.edu.tw.      86400    IN       NS       ntuns.ntu.edu.tw.
csie.ntu.edu.tw.      86400    IN       NS       csman2.csie.ntu.edu.tw.
csie.ntu.edu.tw.      86400    IN       NS       csman.csie.ntu.edu.tw.
;; ADDITIONAL SECTION:
csman.csie.ntu.edu.tw. 600      IN       A        140.112.30.21
```

```
ntuns.ntu.edu.tw.      80670   IN      A       140.112.254.6
csman2.csie.ntu.edu.tw. 600     IN      A       140.112.30.12
[17:57] b01902050@linux6:/home/student/01/b01902050>
```

4. 為什麼 DNS 要使用分層負責的分散式架構?如果有一台主機負責所有的名稱轉換,請列出三個此一集中式架構的壞處。

1. 所有dns訪查皆只經由此機器，流量會過大，速度下降。
2. 所需儲存資料空間需求大
3. 儲存資料多導致搜尋變慢

5. 為什麼目前的 IP protocol 需要使用 IP address 作為轉送到哪邊的依據,而不直接使用人可以閱讀的 domain name 就好?

- ip格式統一，在封包中資料整齊。
domain name，好記，但是長短不一，規格上不好處理。

System Administration

Build a .deb Package

Omnitty¹ is a ssh multiplexer. On Debian GNU/Linux testing distribution, try to make a `.deb` package that has the necessary dependencies and does all the configuration mentioned on the official website. You can then install this `.deb` file by issuing the command `"dpkg -i omnitty-0.3.0.deb"`, followed by `"apt-get -f install"`. You have to hand in the `.deb` file you make and write the report on what you have done in detail. The report should be written for a novice, which means he/she can reproduce the `.deb` file by following the instructions in your report.

You can start with the basics of the debian package management system and what the control file is.² The `Maintainer` field in the control file should be your student id, such as `r03922003`.

略

¹<http://omnitty.sourceforge.net>

²https://www.debian.org/doc/manuals/debian-faq/ch-pkg_basics.en.html