SWINBURNE UNIVERSITY OF TECHNOLOGY

TNE20003 – Internet and Cybersecurity for Engineering Applications

Portfolio Task – Lab 5 Distinction Task

Aims:

- Explain & understand NAT at deeper level

Preparation:

- View "NAT & DHCP"

Due Date:

- All tasks in this lab are to be completed and demonstrated to your Lab instructor preferably during or at the end of the current lab, but if you do not complete the tasks you may demonstrate it at the beginning of your next lab class.

Task 1.

Build the network provided in figure 1 with Cisco Packet Tracer

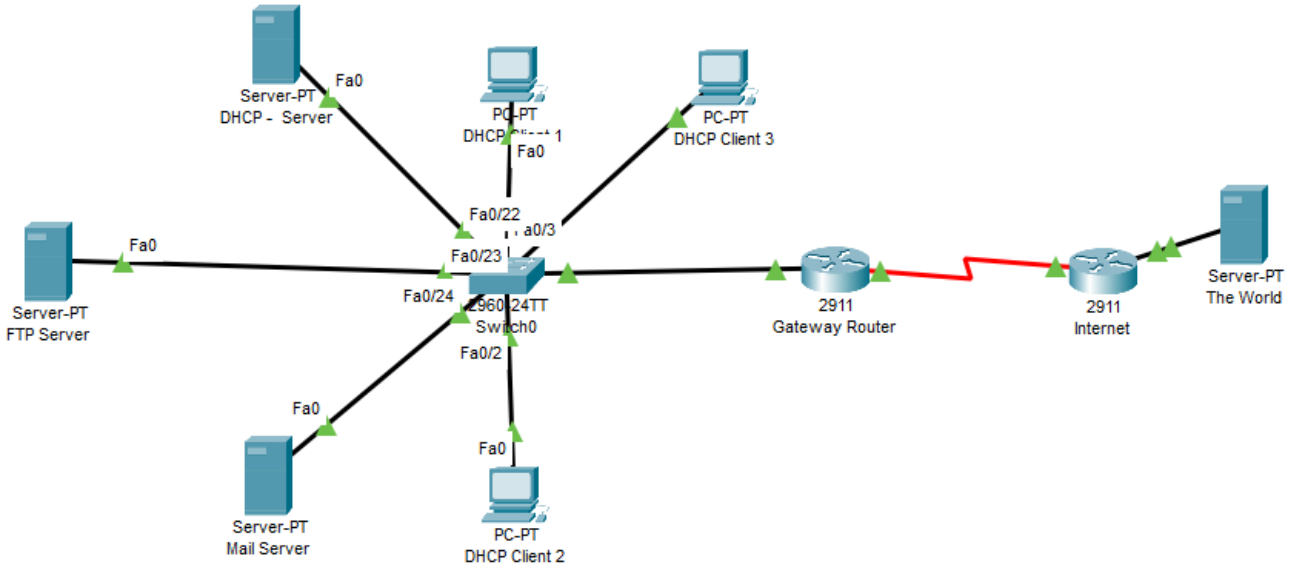

Figure 1

Use the network you built and tested in the Credit task for lab 5 to test and answer the following questions.

Task 2.

1. You have implemented NAT successfully in the Pass task.

   a. Now generate some traffic by pinging from DHCP Client 3 to **The World** server located at 136.186.100.2. What happens? At first two ping packages, the DHCP Client 3 could not pint to The World Server. However, it could ping to The World Server for the next 2 attempts

   b. Are there any address translations on the **Gateway** Router# prompt? Explain

   Yes, it translate from 192.168.1.101 (DHCP Client 3) -> 136.186.100.2 (The World)

   c. Ping **The World** server located at 136.186.100.2 from the **ftp** server. What happens?

   FTP server could not be PING to the The World server since the FTP is blocked by the ACL (192.168.1.100 +- 0.0.0.63 wildcard)

d. How far does the ping from the **ftp** server propagate through the network?
It could only go to the Gateway router and then come back with fault response

e. Were there any translations on the Gateway router? Explain why/why not.
There are no translations on the Gateway router, since the traffic outside 192.168.1.100 (0.0.0.63 wildcard) is blocked

f. Change the IP address of DHCP Client 3 to a static address of 192.168.1.80. Ping **The World** server located at 136.186.100.2 from this **PC**. What happens?
It could still be ping to The World server

g. Part of your output should be as shown in the picture below:

```
Router# sh ip nat tran
Pro  Inside global     Inside local       Outside local      Outside global
icmp 200.8.8.1:5       192.168.1.80:5     136.186.100.2:5    136.186.100.2:5
```

h. What does the **:5** represent? The Sequence number of the ICMP (PING) package

i. Now ping from DHCP Client 2 and see the translations. What do you see? DHCP Client 2 IP has been added to the NAT table

j. What does inside local mean? The IP address of a host of the local network (not translated via NAT)

k. Change the IP address of DHCP Client 3 to a static address of 192.168.1.180. Ping **The World** server located at 136.186.100.2 from this **PC**. What happens? It could not ping to The World

l. Were there any translations on the **Gateway** router? Explain why/why not.
No translations. Because the ACL only accepts 192.168.1.100 to 192.168.1.127 (wildcar 0.0.0.63) so if the IP is out of the accepted range then it will be blocked by ACL thus denied the ICMP

~~~~~ End of Lab ~~~~~