CSE421 Assignment 5 - DHCP, NAT, Fragmentation

Total points 15/15

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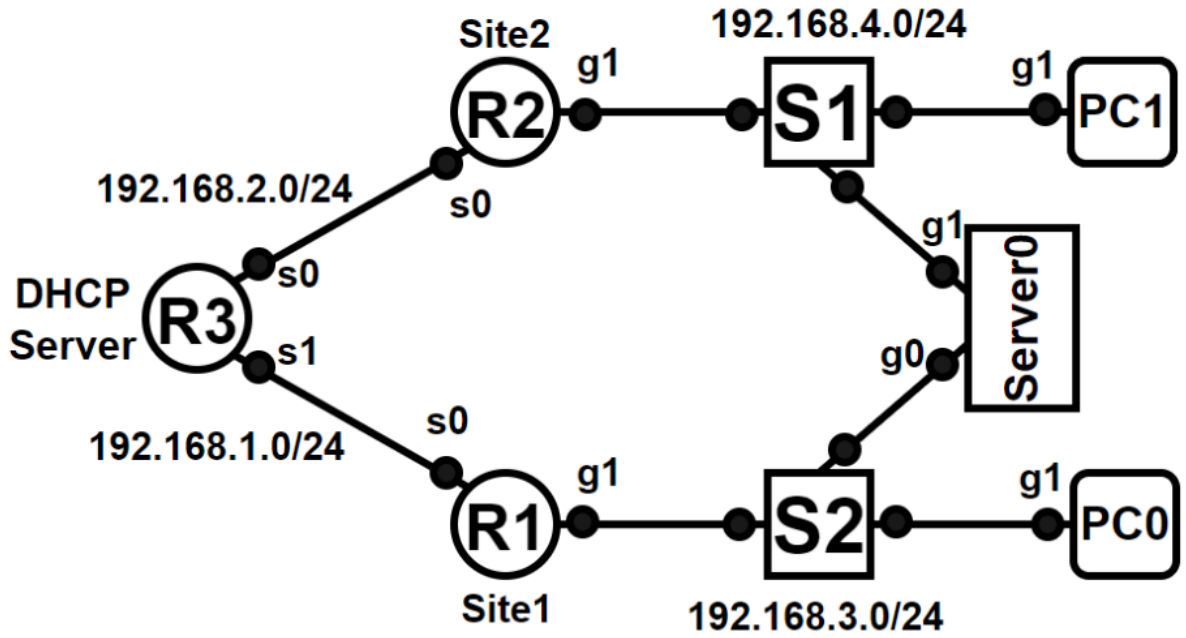
Figure 01 - DHCP



✓ Q1. Router R3 is configured as the DHCP. PC1 is trying to join the network as shown in the Figure 01 and sends a DHCP Discover packet. Can PC1 reach this DHCP Server? *1/1

- ○ Yes
- ◉ No ✓

✓ Q2. How can you configure the above topology such that the DHCP packet CAN reach the R3? *2/2

- ◉ Set up DHCP Relay ✓
- ○ Set up DHCPv6 server
- ○ Set up NAT on R2
- ○ Set up PAT on R3

A student project web server is hosted inside a university computer lab at private IP address **10.10.5.50**, listening on **port 8080**. The lab is connected to the internet via a router that uses **NAT** with a public IP address. When the student shares the public IP with a recruiter to view the project remotely, the recruiter reports that the link does not work.

✓ Q3. Why can't the recruiter access the server using the public IP address? *2/2

- ○ Because the web server is not running on port 80
- ◉ Because private IP addresses are not routable on the public internet and the NAT router blocks incoming connections by default ✓
- ○ Because the recruiter must be on the same local network as the server
- ○ Because the router automatically forwards all incoming traffic to internal hosts

✓ Q4. What network configuration should be set up on the router to make the server accessible from outside the university? *2/2

- ○ Enable DHCP on the router
- ○ Configure DNS resolution for the private IP address
- ◉ Set up port forwarding to map the public IP and port to the server's private IP and port ✓
- ○ Increase the router's bandwidth

✓ Q5. Given a packet containing **12030 bytes** which includes a header size of **25 bytes**. This packet reaches a router that needs to send it through a link with the MTU **1905 bytes**. The first byte number of the first fragment starts from **8**. Now Answer the following questions: *2/2

i) **Calculate** the total number of fragments.

7 ✓

✓ ii) **Calculate** the last fragment size. * 2/2

750 ✓

✓ iii) Calculate the fragment offset of the 4th fragment. * 2/2

706 ✓

✓ Q6. Given the IPv6 address: 4500:0000:00EF:0002:0000:0000:076A:09B0. Shorten this address. *1/1

(Note: Write your answer in the following format: 2001:0db8:AC10:FE01::1234:ABCD)

4500:0:EF:2::76A:9B0 ✓

✓ Q7. Write the fully expanded string notation of the following IPv6 address: "::EF" *1/1

(Note: Write your answer in the following format: 1234:5678:9ABC:DEF0:0000:0000:0000:00FF)

0000:0000:0000:0000:0000:0000:0000:00EF ✓

Please submit your calculations of Q5 in pdf format. *

Assignment05-2...

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