CET2032 - Computer Networks & Network Security - Practicum 02

Topics Covered: IP addressing, CIDR, Subnetting, Application Layer, DNS and TCP/UDP

Learning Objectives:

- Familiar with the application of subnetting performed on network
- Understand network traffic protocol and flows by analyzing packets in Wireshark

Deliverables:

- Submit a single ZIP file containing your answers to the tasks below (should include one Packet Tracer file and a PDF file), with the format `CET2032_P02_<Trainee_name>.zip`. Eg: `CET2032_P02_John_Doe.zip`.

Tasks

Task 1 (70 marks)

For this task, open the Packet Tracer file "**P02.pkt**" and follow the instructions stated inside the file.

Also, take note to list out the network, first host, last host, and broadcast address for all the subnets which you have allocated to the networks respectively (and also those pre-allocated) inside the Packet Tracer file. Within that Packet Tracer file, list out all unused subnets as well. See image below for reference.

for each site, must list out the network, first, last and broadcast.

then finally must list out the unused subnet

for site 2 there are some extra subnets you can use to assign to site 3.

you must also do the network, first, last and broadcast for the router to router serial connection

you must also do it for the serial link between the routers

SITE 1

network : 10.1.1.0/24
first host : 10.1.1.1/24
last host : 10.1.1.254/24
broadcast: 10.1.1.255/24

S0/1/0
First IP

G0/0/0
Last IP

ISR4321
R1

3650-24PS
Switch1

Server-PT
DHCP1

PC-PT
PC0

PC-PT
PC1

PC-PT
PC2

Figure 1: Example

take note that once you subnet site 2 to give to site 3, site 2 ip addresses also change.
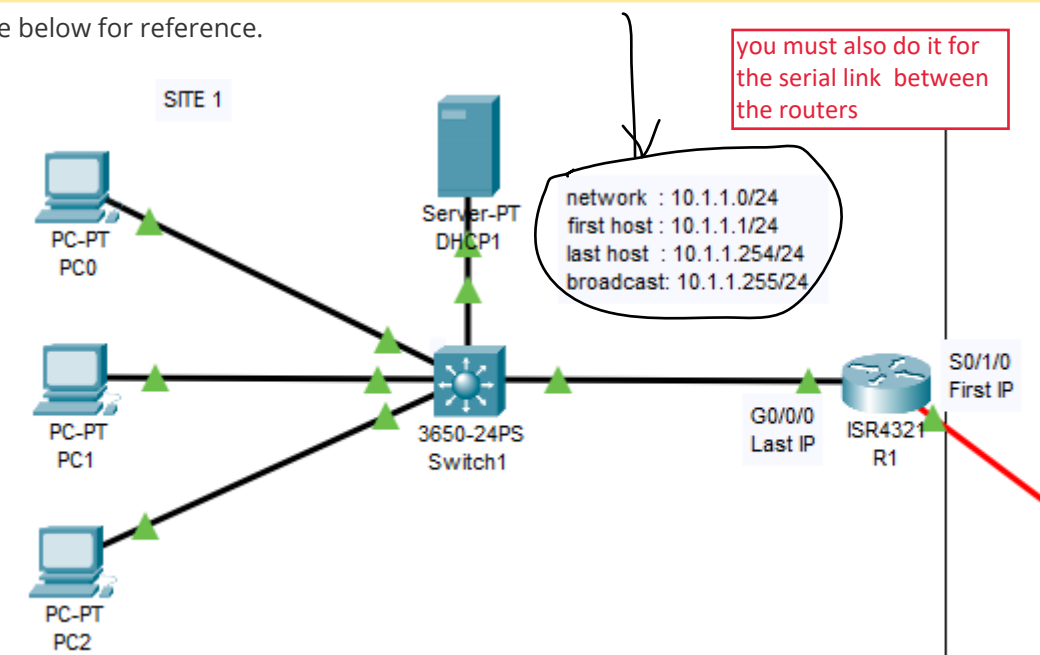
Rename the existing Packet Tracer file with your answers to `P2_T1_<Your_Name>.pkt` and include it inside the zip file submission (refer to **Deliverables**).

Task 2 (30 marks)

For Task 2, open the file "**demo.pcap**" in Wireshark. The file contains information on activities a single user performed through the network.

Analyze the information on Wireshark based on the given pcap file and answer the following questions:

1. What were the protocols used? (select any THREE) What do each of these protocols do, generally? (12 marks)

2. What was the user's device's MAC address? (2 marks)

3. What was the user's device's IP address on the local network? (2 marks)

4. What was the IP address/addresses of the server which responded to the HTTP request? (4 marks)

5. What was the domain name/s that resolved to those IP address/addresses in Q4? (4 marks)

6. What TCP/IP Transport layer protocol did the DNS query use? (2 marks)

7. What was the port of the user's device that sent information to www.google.com (HTTP request/response)? (2 marks)

8. What was the port of the server serving www.google.com that sent information to the user's device (HTTP request/response)? (2 marks)

Submit your answers in a PDF file format named `P2_T2_<Your_Name>.pdf` and include it inside the zip file submission (refer to **Deliverables**).

Rubrics

For the maximum allocation of marks, refer to the marks assigned for each task.