CET2032 - Computer Networks & Network Security - Practicum 01

Topics Covered: OSI model, Data encapsulation,

Learning Objectives:

- Familiarize with the life of a packet by understanding the traffic flows through a network
- Understand the various encapsulation used in a network and also its structure format
- Troubleshoot general networking issues given a scenario

Deliverables:

- Submit a single PDF file, containing your answers to the tasks below, with the format `CET2032_P01_<Trainee_name>.pdf`. Eg: `CET2032_P01_John_Doe.pdf`.

Background

The CEO of DigiCorp has configured for himself a specific route for data transmission from the laptop in his office to the PC in his home. However, he is still a bit skeptic that the data packet did follow the route he configured.

So, as a Packet Detective, you are hired by the CEO to help him investigate the actual path taken by the packets from his laptop to his home PC.

Tasks

Task 1 (70 marks)

Open the Packet Tracer file "**P01a.pkt**". Execute a ping from **Laptop1** to **PC2** and answer the following questions based on the **echo request message** sent from **Laptop1** to **PC2** *(you might want to filter all the protocols except for the echo request protocol)*:

For questions <u>1, 4, 6, 9, and 12,</u> select your answers from the following table:

a) Laptop1's MAC address	e) Router1's G0/0/0 MAC address	i) Switch2's G1/0/2 MAC address
b) PC2's MAC address	f) Router1's Se0/1/0 MAC address	j) Switch2's G1/0/1 MAC address
c) Switch1's G1/0/1 MAC address	g) Router2's Se0/1/0 MAC address	k) There is no MAC address
d) Switch1's G1/0/2 MAC address	h) Router2's G0/0/0 MAC address	-

1. Which network interface from the table above is the destination MAC address in the frame at **A** in the network?
2. What is the destination MAC address at **A** in the network?
3. What encapsulation is used at **A** in the network?
4. Which network interface from the table above is the destination MAC address in the frame at **B** in the network?
5. What is the destination MAC address at **B** in the network?
6. Which network interface from the table above is the destination MAC address in the frame at **C** in the network?
7. What is the destination MAC address at **C** in the network?
8. What encapsulation is used at **C** in the network?
9. Which network interface from the table above is the destination MAC address in the frame at **D** in the network?
10. What is the destination MAC address at **D** in the network?
11. What encapsulation is used at **D** in the network?
12. Which network interface from the table above is the destination MAC address in the frame at **E** in the network?
13. What is the destination MAC address at **E** in the network?
14. What encapsulation is used at **E** in the network?

Task 2 (30 marks)

One week later, the CEO added a new gaming PC to his room along with a new switch (Switch3) connected to the existing Router2. However, he was facing some trouble in trying to link the two PCs (PC2 and GamingPC) together. He tried pinging from PC2 to GamingPC and vice versa but all did not work. Once again, you have been engaged to help him troubleshoot these issues.

Open the file "P01b.pkt". Fix the problem on this network to ensure that both PCs can ping each other.

Explain what is causing the network problem and what did you do to fix the issue. Finally, attach a screenshot as proof that the network issue is resolved with **YOUR NAME** replacing the **GamingPC** like so:
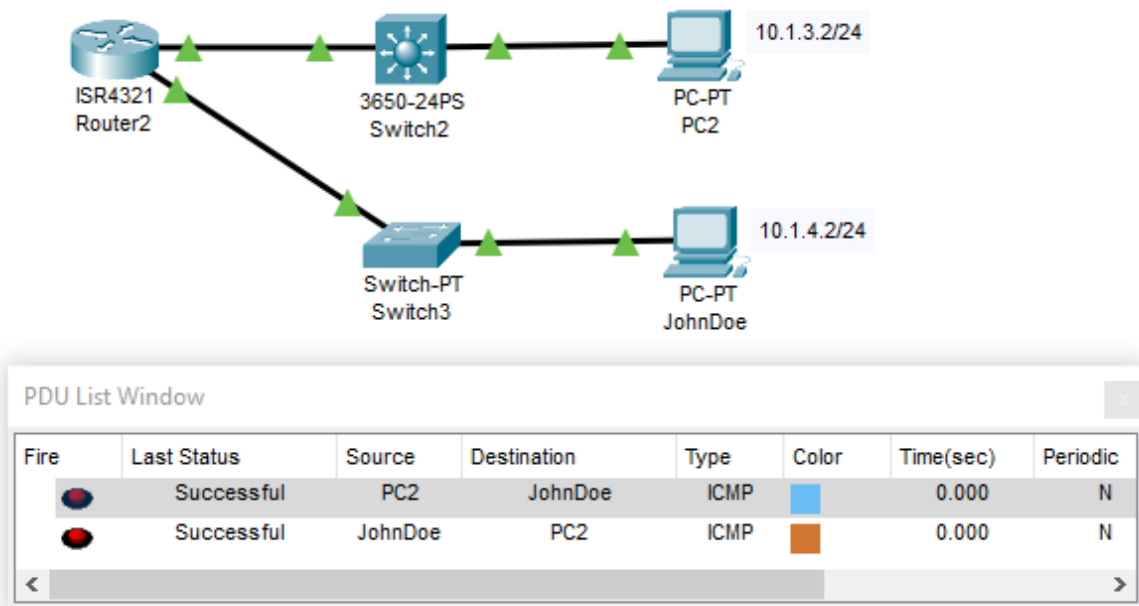
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic
	Successful	PC2	JohnDoe	ICMP		0.000	N
	Successful	JohnDoe	PC2	ICMP		0.000	N

Figure 1: Example proof of network issue resolved

Rubrics

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