**Network test tools and network design simulation**

**0、environment**

Ubuntu 20.04 LTS

Cisco Packet Tracer 8.2.0 (you can download it from this URL: https://skillsforall.com/resources/lab-downloads, you may need to register for an account).

**1、Network Test Tool Use – Linux basic network test commands and wireshark packet capture experiment (50 points)**

(0) Be proficient in using commands such as ifconfig, ping, nslookup, arp, netstat, tracert, etc., and try to explain what protocol they are all done with.

(1) Capture the TCP/UDP packet and explain the TCP/UDP connection process through the traffic packet.

(2) Use the wireshark (GUI) and the tshark (command) packet capture tool to grab ARP, ICMP, DNS, H TTP, TCP, UDP and other packets, and parse the packet information content in the packet. (The contents of the bag you caught may not be the same as what you learned, please explain why?)

(3) By capturing packets, explain the process of encapsulating and decapsulating packets.

Please write the above question into the report and name it name-id-network-test.pdf, Includes description, command output and images (including screenshots of your packet capture using wireshark)

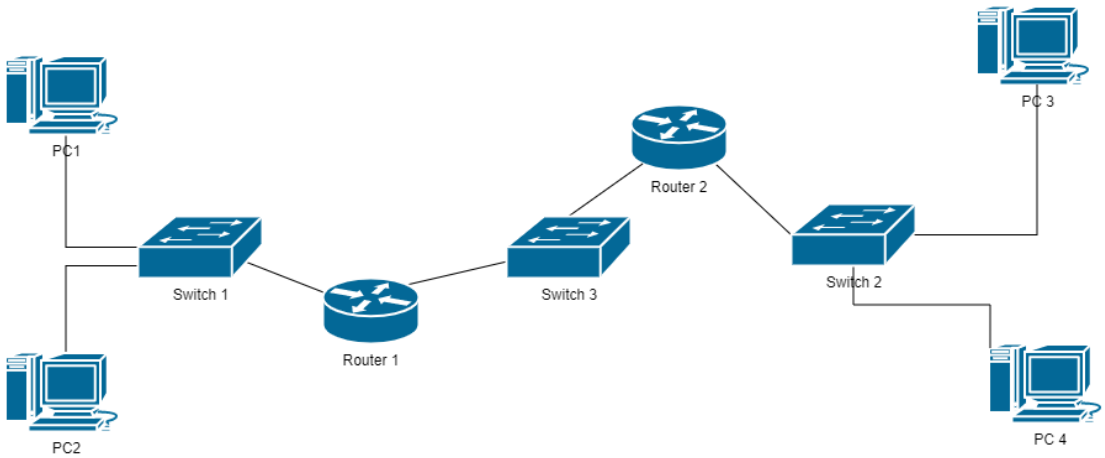
**2、Network Design Simulation – Use simulation tools to complete network simulation (50 points)**

(1) Use Cisco Packet Tracer to complete the network topology design and configure the network

(2) Network connectivity verification and conclusion analysis

Follow the preceding two steps to complete the network topology shown in the following figure

Task1:

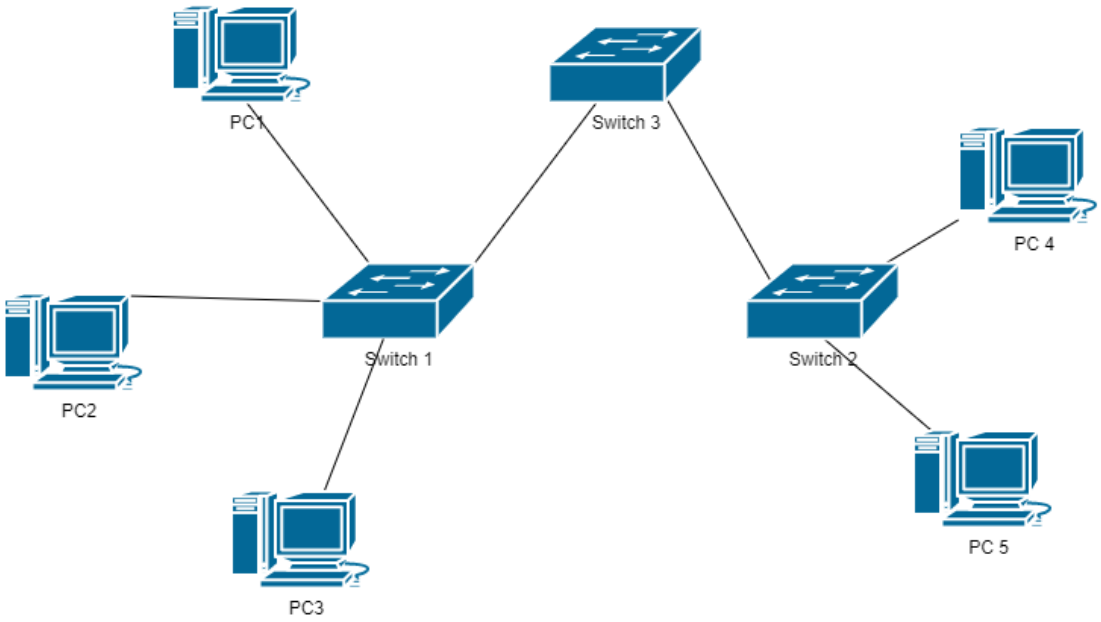


Configuration:

| device | | IP |
|---|---|---|
| Router 1 | Interface0 | 192.168.1.1/24 |
| | Interface1 | 192.168.2.1/24 |
| Router 2 | Interface0 | 192.168.2.2/24 |
| | Interface1 | 192.168.3.1/24 |
| PC 1 | | 192.168.1.10/24 |
| PC 2 | | 192.168.1.11/24 |
| PC 3 | | 192.168.3.10/24 |
| PC 4 | | 192.168.3.11/24 |

Task2:

VLANs are helpful in the administration of logical groups, allowing members of a group to be easily moved, changed or added. This activity focuses on creating and naming VLANs and assigning access ports to specific VLANs.




Configuration:

| device | IP | vlan |
|---|---|---|
| PC 1 | 192.12.10.11 | 10 |
| PC 2 | 192.12.10.12 | 10 |
| PC 3 | 192.12.20.13 | 20 |
| PC 4 | 192.12.10.14 | 10 |
| PC 5 | 192.12.20.15 | 20 |

**NOTE:**

Please save the file as name-id-task1.pka **(10 points)** & name-id-task2.pka **(20 points). Ensure that your configuration is completed successfully and that we can assess successfully. Please write your name and student number in the blank areas of the packet tracer and make sure they are saved together in the .pka file.**

Please write about the process you completed and the results of your tests in your report(name as name-id-simulation.pdf), and you are encouraged to include any difficulties you encountered. **(20 points)**

## 3、Reference

https://www.netacad.com/courses/packet-tracer (it is highly recommended that you learn how to use the Cisco Packet Tracer via this URL).

## 4、Submit

**Due on 23:59, 11 Dec. 2022**

**Please compress all files and name as name-id.zip**

**Cheating or abuses will not be tolerated.**