Ollscoil Teicneolaíochta an Atlantaigh

Atlantic Technological University

HIGHER DIPLOMA IN SCIENCE – COMPUTING (SOFTWARE DEVELOPMENT)

NETWORK TECHNOLOGIES

ASSIGNMENT: NETWORKING WITH CISCO PACKET TRACER

THIS IS AN INDIVIDUAL ASSIGNMENT.

BY ATTEMPTING THIS ASSIGNMENT YOU AGREE TO ABIDE BY THE ATU STUDENT CODE OF CONDUCT AND ACADEMIC INTEGRITY POLICY, TAKING PARTICULAR NOTE OF THE ARTICLES LISTED BELOW:

As a student of Atlantic Technological University, you will be expected:

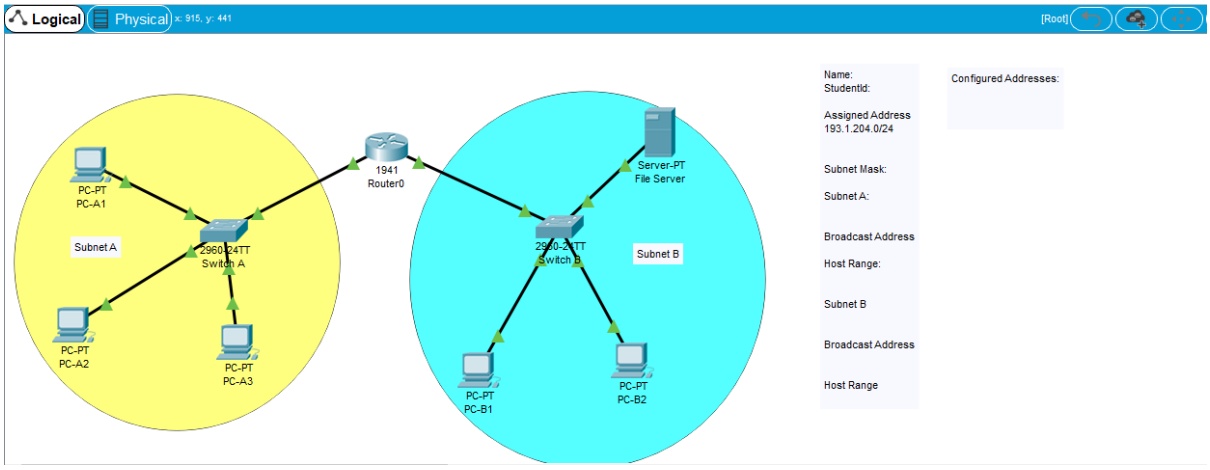
- ***to complete and submit / present your own work*** *in respect of all assignments, projects, and examinations.*
- *to adhere at all times to the ATU Academic Integrity Policy,* ***and to not plagiarise[1] material or to engage in any form of contract cheating[2]*** *(regardless of whether it is paid or unpaid).*
- *to take reasonable care of your own work / assessable material, to minimise the potential for it to be compromised or copied, and in the case of individual assessment,* ***to not share work you have completed, in whole or in part, with others****.*

Assignment: Networking with Cisco Packet Tracer

You are the network administrator for a new office, and you've been tasked with setting up a small network. You've been assigned the network address 198.51.100.128/25 and have decided to split the network up into a number of subnets.

Core Tasks

1. Design an addressing scheme which will divide your network space into subnets, allowing for up to 60 hosts per subnet.
2. Using Cisco Packet Tracer, build and configure the network as shown below, based on the IP addressing scheme you designed.
    - Your network should work! **All devices should be able to reach each other** (e.g. via ping). This is a key component of the assignment and will be tested as part of the grading process.
    - The coloured ovals are simply a graphical indication of the subnet boundaries, there's no need to include them in your network.
3. Place a note on the Packet Tracer palette containing the following information:
    - Your name and student Id
    - Details of your addressing scheme, to include:
        - Assigned network address (given above)
        - Subnet mask
        - Network addresses for subnets A and B
        - Broadcast addresses for subnets A and B
        - Host ranges for subnets A and B
    - A list of configured addresses for all devices on the network
        - Include PCs, the File Server, and the router interfaces.



Extra Credit

To achieve an A grade, you will need to research and complete an additional network configuration task of your choosing which was not covered in the Packet Tracer labs. Suggestions of possible tasks to choose are:

- Set up **Network Address Translation (NAT)** on a router to allow devices on a private subnet to communicate with an external network. Document the NAT configuration in a note on the Packet Tracer palette.

- Set up a **DHCP server** on one of the subnets to dynamically assign IP addresses to devices. Configure the DHCP service, and document the DHCP configuration in a note on the Packet Tracer palette.
- In addition to the IPv4 addressing, create an **IPv6 addressing scheme** for the network, including subnets, host addresses, and router configurations. Document the IPv6 addressing scheme in a note on the Packet Tracer palette.

Submission

- Submit a Packet Tracer file (.pkt) of your network, which should include the notes as described in 3 above. Your file should be named *LastName_FirstName_StudentId.pkt,* e.g. *French_John_G123456.pkt.*

Grading

Your submission will be graded alphabetically on a scale of A-F as follows.

- **A (70-100%)**: Core tasks are thoroughly completed, with an extra-credit task completed and documented accurately.
- **B (60-69%)**: Core tasks completed accurately with minimal errors. No extra-credit tasks required.
- **C (50-59%)**: Core tasks are mostly complete with several errors, but general functionality is present. No extra-credit tasks required.
- **D (40-49%)**: Core tasks show basic effort but contain major errors or missing elements that impact functionality.
- **F (Below 40%)**: The assignment does not meet minimum requirements or demonstrate understanding of the tasks.