ELEC S315F: Routing and Switching

Take-Home Assignment (OES component)

This assignment carries 100% of OES (that is, 50% of the total assessment for this course).
Release date: 3 June 9:00
Due date: 10 June 23:59

Title:

Design and Implementation of a Network Integrating with Various Kinds of Technologies

Overview:

You need to design a network which integrates a number of routing and switching technologies and use PacketTracer to implement and verify it.

Each student will be assigned a network address so that different students will have different addressing schemes. Besides, different students will be required to use different router and switch models.

Requirements:

You need to design your scenario (e.g., a company with a headquarter and multiple branch offices, or a company with several departments) in which the following technologies will be used:

- Subnets/VLSM (20%)
- Statics routing (20%)
- Dynamic routing (20%)
- ACL (20%)
- VLAN/Trunk (20%)

Use last 4 digits of your student ID as the first 16 bits of the network ID of the main block of addresses in your scenario. For example, if your 8-digit student ID is 1250**4430**, then a block of **44**.**30**.0.0/16 addresses has to be used in your scenario.

Grading:

Each technique accounts for 20%. More specifically,

- Design 5% (Correctly apply the technology in the right situation)
- Implementation 10% (Correct implementation using PacketTracer)
- Verification 5% (Provide testing cases that can show the correctness of implementation)

As you can see the total implementation marks for the five techniques is 50 marks, which means that as long as you can implement them correctly, you can get a pass.

Q&A:

A forum about this OES component will be created in OLE's Discussion Board.
All questions about this OES component should be asked there so that everyone will receive the same information.

Deliverables:

The following three items have to be submitted.

1. A report with the following 5 sections:
   Section 1: Description of your scenario (a figure showing your network is needed)
   Section 2: Your addressing scheme (i.e., the subnets and IP addresses assignment)
   Section 3: Your routing design (with testing cases showing that packets have been correctly routed)
   Section 4: Your ACL design (with testing cases showing that the ACL has been correctly set)
   Section 5: Your VLAN design (with testing cases showing that LANs are separated by VLAN)

2. The packet tracer file.

3. A video (around 3-5 minutes) recording your **explanation** on one of the sections of your report:
   If your 8-digit student ID ends at "1", "2", "3" or "4", explain Section 3 only.
   If your 8-digit student ID ends at "5", "6", "7" or "8", explain Section 4 only.
   If your 8-digit student ID ends at "9" or "0", explain Section 5 only.

Plagiarism Policy

A zero mark will be given if you copy someone else's work or you let someone copy your work.