EECS 3020: Introduction to Computer Networks

Assignment 2

Description:

The assignment 2 purposed to let the student use the Cisco Packet Tracer Software in order to simulate the network.

Deadline: Friday 8 May, 2020 (Midnight)

Important Information:

- [50%] Report
  - Part I: [20%] Student is required to ***submit the report*** with the required information.
  - Part II: [30%] Student is required to ***answer the following questions into the report.***
- [45%] Student is required to ***submit the simulation file (*.pkt) with required network equipment and note*** by follow the instruction of this assignment with the filename ***StudentID_Ass_2.pkt***.
- [5%] Student is required to ***compress his/her simulation file and report together*** with the filename ***StudentID_Ass_2.zip*** and submit to the ilms system by the deadline (no extended).

READ THIS FIRST
Plagiarism, paraphrasing and downloading large amounts of information from external sources, will not be tolerated and will be dealt with severely. Although you should make full use of any source material, which would normally be an occasional sentence and/or paragraph (referenced) followed by your own critical analysis/evaluation, you will receive no marks for work that is not your own. Your work may be subject to checks for originality which can include use of an electronic plagiarism detection service.

PART I
Instruction:

Moon system company is now considering to create a hybrid network to combined their three networks together. In this assignment, you are required to simulate the hybrid network and also design the IP address list for the company.

Requirement from Moon system company:

1. Three set of IP address lists that be able to contain at least 254 possible hosts.
2. At least two kinds of topology (star, ring, etc.) are required to use within this simulation.
3. All pcs/laptops connected to the network must be able to find the each other (via ping command).
4. All pcs/laptops connected to the network must receive their IP address directly from the DHCP. (No fix IP address allow in this simulation)

Report:

- You need to clearly show to TAs how you simulate the network.
- The more detailed, the more scores you can get.
- Submit your report with the filename StudentID_Ass_2.pdf to ilms

PART II
Questions:

1. [3%] What networking equipment is usually at the center of a star topology? *Note: Please give the briefly explain how it works*
2. [3%] Briefly explain: What is the hybrid topology?
3. [2%] What are the advantages and disadvantages of using the ring topology? *Note: at least three advantages and three disadvantages are required.*
4. [2%] What are the advantages and disadvantages of using the hybrid topology? *Note: at least three advantages and three disadvantages are required.*
5. [5 %] Briefly explain how Classless Inter-Domain Routing (CIDR) helps resolve the IPv4 address exhaustion problem
6. [5 %] What network topologies are supported by Zigbee?
7. [5 %] BLE initially only support star topology. But now it has been enhanced with mesh networking capabilities for the purpose of IoT applications. Find out when (Month/Year) the BLE mesh networking standard was published by Bluetooth Special Interest Group.
8. [5 %] Please briefly explain the cellular network evolution from 0G to current.