EECS 3020: Introduction to Computer Networks
Assignment 3: Final Project (v1)

Description:

The assignment 3 purposed to let the student use the Cisco Packet Tracer Software in order to simulate the network.

Deadline: Wednesday 17th June, 2020 (Midnight—11.59 pm.)

Important Information:

- [35%] Report
  - [30%] Student is required to ***submit the report*** to clearly show to TAs how you simulate the network.
- [65%] Student is required to ***submit the simulation file (StudentID_Sim.pkt) with required network equipment and note*** by follow the instruction of this assignment.

Student is required to ***compress his/her simulation file and report together*** with the filename StudentID_Ass_3.zip (or 7z/rar) and submit to the ilms system by the deadline.

Late submission can be done via email (wcislab@gmail.com) with 10% deduction per day (No submission allows after 6 pm of 06/19)

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.
注意事項
本課程不允許抄襲他人作業或是網路段落，以及複製貼上大量 他人文章，若有以上或類似之行為將會受到嚴重處分。任何地 方若需要用到他人的文章內容，請換成自己的分析或是言語。 若直接複製貼上將拿不到任何分數。每個作業的原創性會經由網路比對偵測系統（十分強大）進行檢測。

Instruction:

TSC Creative Co.,Ltd is now considering to expand the business with a new intelligence office in three countries, including Thailand, Vietnam and Malaysia and connect the network from three new offices to the head office in Hsinchu (Taiwan)via the ISP (Internet Service Provider). In this assignment, you are required to simulate the network based on the requirement and also design the IP address list for the company.

Requirement:

1. All network addressing must conform to **IP version 4** addressing.
2. Each office has to contain at least **65,000 possible hosts**.
3. All pcs/laptops connected to the network must be able to find the each other (via ping command).
4. **The network equipment used in this simulation must change the hostname to be more specify base on located country**.
5. For Thailand and Taiwan office, all pcs/laptops connected to the network must receive their IP address directly from the **DHCP server**. (No fix IP address allow in this simulation)
6. For Vietnam and Malaysia office, all pcs/laptops connected to the network must receive their IP address directly from the **DHCP configuration on the router**. (No fix IP address allow in this simulation)
7. The routing protocols for this assignment are **eigrp** and **ospf**.
    a. ALL the serial interfaces on the border routers must be regarded as **DTE interfaces**. All network domains should use the **OSPF routing protocol as Area 0**.
        i. The connection between ISP and Taiwan border router will use the **1.0.0.0/8** network.
        ii. The connection between ISP and Thailand border router will use the **2.0.0.0/8** network.
        iii. The connection between ISP and Vietnam border router will use the **3.0.0.0/8** network.
        iv. The connection between ISP and Malaysia border router will use the **4.0.0.0/8** network.
    b. Each country network, all network domains should use the EIGRP routing protocol.
    c. In other words, RIP and static IP are not allowed for this assignment.

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 report.docx (or pdf) to ilms together with your simulation file as in a *.zip/rar/7zip file.

According to assignment 2, we found that there are some of you copy the work from the each other. So, we are required you to submit your 5-10 mins presentation video to clearly show your simulation individually. The submission link will announce later.

Marking Schemes for the Final Project

10 percent: Finish the following points with a good report:

1. Office network
    a. 65,000 possible hosts
        i. These hosts must be able to find the each other (via ping command).
    b. Hostname needs to be more specify base on located country.
    c. For Thailand and Taiwan office, all pcs/laptops connected to the network must receive their IP address directly from the DHCP server. (No fix IP address allow in this simulation)
    d. For Vietnam and Malaysia office, all pcs/laptops connected to the network must receive their IP address directly from the DHCP configuration on the router. (No fix IP address allow in this simulation)
    e. Implement the EIGRP routing protocol
2. Main network
    a. Implement the OSPF Area 0
    b. DTE interfaces
    c. The connection between ISP and Taiwan border router will use the 1.0.0.0/8 network.
    d. The connection between ISP and Thailand border router will use the 2.0.0.0/8 network.
    e. The connection between ISP and Vietnam border router will use the 3.0.0.0/8 network.
    f. The connection between ISP and Malaysia border router will use the 4.0.0.0/8 network.

5 percent: The intelligent network implementation/construction with a clear explanation.

The intelligent network covered by this assignment include, but are not limited to,

1. Security
2. Availability
3. Mobility

作業三評分標準

10%：報告裡面完整的呈現以下內容：

1. 公司網路
    a. 至少有 65,000 個主機
        i. 這些主機需能找到其他主機（利用 ping command）
    b. 主機名稱須明確指出所在地
    c. 對於泰國以及台灣的公司，所有連接上網路的桌電或筆電，必須直接接收到來自 DHCP 伺服器分配的 IP 地址（此作業不可固定主機的 IP 地址）
    d. 對於越南以及馬來西亞的公司，所有連接上網路的桌墊或筆電，必須直接接收到來自路由器上的 DHCP 配置分配的 IP 地址（此作業不可固定主機的 IP 地址）執行 EIGRP 路由協定
2. 主網路
    a. 執行 OSPF Area 0
    b. DTE 介面
    c. 用 1.0.0.0/8 network 連接 ISP 以及台灣邊界路由器
    d. 用 2.0.0.0/8 network 連接 ISP 以及泰國邊界路由器
    e. 用 3.0.0.0/8 network 連接 ISP 以及越南邊界路由器
    f. 用 4.0.0.0/8 network 連接 ISP 以及馬來西亞邊界路由器

5%：清楚的解釋智能網的建構，此作業的智能網需包含以下內容（可自行增加更多內容）

1. 安全性
2. 可行性
3. 流動性