Mini Project
CSE405 (Computer Networks)

Title: Design a full-fledged network for an organization with multiple subnets.

Dynamics

The project must be done individually. A technical report consisting of the design criteria and explanation must be submitted upon the completion of your work. Please submit both packet tracer file (.pkt) and the report (.pdf) using Google classroom.

Background

Apex University, is an enterprise like East West University, owns many computers, with a complex network infrastructure. Apart from wired internet access to all the classrooms, labs, employee PCs, library and other administrative and academic wings, the university also provides wireless internet access for every campus. On top of that the university runs complex networked systems to support several of its business process like admissions, advising, results, eTender, library management, accounts and so on.

This complex network infrastructure is subnetted and switching/routing mechanisms are in practice.

Tasks

Your task is to create a complete model of a complex network by discovering the interconnectivity of the systems and subnetworks, which will reflect the University's structure and facilities. Features within the network will include the followings:

- The web page of the university will reflect its own information.
- A **single DNS** sever needs to be installed to locate webserver - meaning people will browse University's web site from any campus with the following address: http://www.apex.edu.bd
- Configure the whole network in such a way that IP for the hosts of different campuses will be automatically assigned by a **single DHCP server**. If a single DHCP is not doable by you, then use multiple DHCP servers; however, that will be discredited.
- Create at least seven LAN, one for each campus; among the hosts in a network make sure some wireless hosts are added in addition to wired hosts.

- University's full network has covered its seven campuses with seven routers; Connections between the campus routers are given at the end of the handout; you must (strictly) follow the given topology.

- Connectivity between all the hosts needs to be established.

- For routing protocol, please use dynamic routing algorithm i.e., OSPF.

- Network addresses will be from all 3 classes.

- Connection between all the routers will be serial connections; if serial connections are not doable, use straight through or cross-over connections; however, that will be discredited.

While designing, keep the issue of future expansion/growth in mind for each of the subnets (if required) and preserve spaces. In physical design, it is a good practice to have a server room where all the servers are in one LAN segment.

Tools

You are free to use any tools necessary. For the design of network model and for implementation of servers 'Packet tracer' is recommended.

Report

Develop documentation professionally where requirements and design specifications will be included. Include the introduction, purpose of the network, physical diagram, and design issues, i.e., number of hosts, networks, limitations and lines of codes used to configure the network in your report.

Assessment methods:

You will be assessed depending on functionality of the network meeting all the requirements. In addition, your report should reflect professionalism and network design should be concise and well organized.

Grading

The overall mark for the project is 20. Assessment would be on complex professional design and arrangement of the network that meet all requirements with functionality and on the report.

Submission Process:
You should submit your packet tracer file (.pkt) and the report (.pdf) using Google classroom within the deadline, mailing is not an option.

Special note: Keep your own design with yourself; do NOT distribute your design. Resemblance will be penalized.

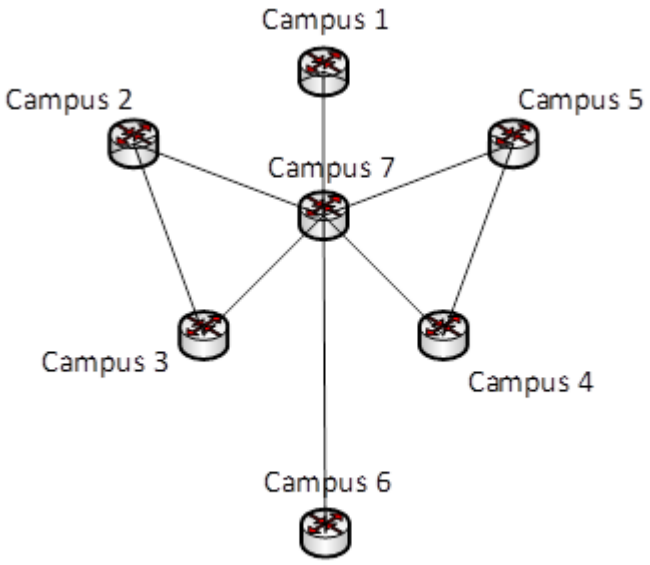

Figure 1: Physical connectivity of the Campus Network