Merul Badda University

Similar to renowned universities abroad, the permanent campus of Brac University will span a huge area, with separate buildings for each department/school in different locations of Merul Badda. Suppose, you are a certified Network Administrator, and the university has reached out to you regarding the setup of its entire network on the new campus.

Given below are the names of the departments/schools where networks will have to be set up and the number of hosts required in each of those departments:

- Department of Architecture (85)
- Department of Computer Science and Engineering (780)
- Department of Economics (220)
- BSRM School of Engineering (155)
- Department of English and Humanities (40)
- School of Law (54)

While creating the network infrastructure, there are certain rules that you need to follow:

- Consider the departments/schools mentioned above as Routers.
- There should be connections between some of the departments in the following way:
    - School of Law to Department of English and Humanities and Department of Architecture
    - Department of English and Humanities to Department of Economics
    - Department of Economics to Department of Architecture
    - Department of Economics to School of Law
- The Department of English and Humanities will also be directly connected to the BSRM School of Engineering.
- BSRM School of Engineering will again be connected to the Department of Computer Science and Engineering.
- Using the network address **10.128.0.0/10**, create subnets to assign to each department/school so that the least amount of IP addresses are wasted.
- **The School of Law** and **Department of Architecture** will use **static IP addresses** to ensure security while the other departments will get their IP addresses through a **dedicated DHCP server**. This DHCP server will be present in the **Department of Economics building.**
- The **BSRM School of Engineering** will have a **web server**. It will host the official website of the university, which says ‘Welcome to Merul Badda University’ whenever the website is visited from any department network.

- A **DNS server** will be set up in the **Department of English and Humanities** building, which will translate the university website URL to an IP address.
- **The Department of English and Humanities** and **The School of Law** will be communicating a lot which is why they will require email servers to be set up so that they can exchange mail among themselves. Make sure the email configurations are all set up.
- All servers must be configured **manually**
- Routing in the whole network should follow these rules:
    - Static routing must be present in all the networks except the Department of Computer Science and Engineering and Department of Economics.
    - Routing for the Department of Computer Science and Engineering and Department of Economics must be configured dynamically.
    - There must be a floating static route configured between the Department of Architecture and the School of Law
    - Default routes cannot be configured
    - Showing 2 end devices per network is good enough to represent the whole population
    - You need to be able to ping each place from another after all the configurations are complete

Deliverables

- The network mentioned above should be implemented in Cisco Packet Tracer, with the necessary devices and complete configuration.
- After completion, you should be able to test the conditions imposed.
- You will have to submit the followings:
    - Network topology diagram with proper labels
    - The configuration commands of all the routers that you have implemented.
    - VLSM tree
    - IP address table