Comma Internet

Comma Internet is a new ISP started by some former students of Brac University who were interested in networking from their undergraduate days. Their goal is to somehow take over the ISP market from their rival, Dot Internet. Suppose, you are a certified Network Administrator, and they have reached out to you regarding the setup of their entire network.

Given below are the names of the places where Comma Internet will be providing internet service and the number of hosts required in each of those places:

- Mohammadpur (228)
- Savar (128)
- Banasree (580)
- Uttara (70)
- Tejgaon (350)
- Tongi (54)

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

- Consider the places mentioned above as Routers.
- Mohammadpur will be the main office of operations of Comma Internet. It will act as the centerpiece for all other places.
- Mohammadpur, Savar and Uttara will each have connections to each other, to ensure uninterrupted connectivity between these places.
- Banasree will be directly connected to Mohammadpur.
- Banasree will also be connected to Tejgaon and Tongi individually.
- Choose an appropriate network address and create subnets to assign to each place so that the least amount of IP addresses are wasted.
- Mohammadpur and Tongi will use **static IP addressing** to ensure security while the other branches will get their IP addresses through a **dedicated DHCP server**. This DHCP server will be present in Mohammadpur.
- Email can be exchanged between all networks. So an **Email server** has to be set up and it will be located in Tejgaon.
- Mohammadpur will also have a **web server** and a **DNS server**. If anyone types the URL **www.commaisbetter.com**, they will see a webpage that says ‘Welcome to Comma Internet’
- All servers will have to be configured **manually**
- Routing in the whole network should follow these rules:
    - Savar will be directly connected to Mohammadpur, and Uttara will communicate with Mohammadpur via Savar.
    - Routing in the whole network must be configured statically.

    - Uttara and Mohammadpur will also be connected, as mentioned earlier (point 3), but it will not be the primary route. A **backup route** has to be configured here.
    - You have to remember the default route cannot be used while exchanging packets. Data will be delivered using standard static routes only.
    - 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 full 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