COMP 535 Computer Networks 1
Course Project Description
Winter 2019
Part 1 and Part 2

Description

The aim of this project is to design and configure a university's campus network according to a set of given requirements, using packet tracer. The university includes 5 faculties: Natural Science, Health, Arts, Social Science, Engineering and Technology, with different departments. It also includes a data center with several servers. The campus is connected to an ISP providing it access to the internet. The entire network is presented in figure 1, together with a set of requirements.

The project is organized in two parts. You will be working in teams of three. Overall you will be covering the following:
- Configuring networks
- IPv4 and IPv6 addressing
- Static routing: Specific + Default routes
- Dynamic routing
- Wireless access
- Configuring and testing applications

Each member of your team will need to submit the packet tracer file to mycourses. The file should be properly documented (i.e. includes subnets IP addresses, static IP addresses of routers and servers, as well as any usernames and passwords needed).

Requirements

Part 1: Deadline: February 24, 2018 23:59

1. **Building the network.**
   - Create a packet tracer with the network presented in figure 1
   - Please use ONLY the following Router: 2911
   - Add three servers in the Data Center subnet
   - Add for each subnet in your departments two PCs
   - Assign hostnames for routers with any theme you want, but keep the reference part indicated in figure 1. As an example: For a Disney theme, for "University" router you can rename it as "Mickey-University"

2. **IPv4 addressing.**
   Note: Ignore the wireless router's configuration for this part
   - Plan the addressing scheme in the campus according to the requirements highlighted in figure 1
   - Servers in your data center need to be provided static IP addresses
   - All PCs should be dynamically configured via DHCP. You can either i) add and use one DHCP server per subnet or ii) add and use one DHCP server per department

3. **Configuring routing.**
   - On "University" router, create a default static route that points to the ISP's router
   - On "ISP" router, create a summarized static route to reach the campus network

Part 2: Deadline: April 7, 2018 23:59

4. **Configuring dynamic routing.**
   - On all routers, except the wireless router, use EIGRP routing protocol
   - Advertise the static route entered on "University" router into the EIGRP routing process, using the "redistribute static" command

5. **IPv6 addressing.**
   - Assign IPv6 global unicast addresses in the two subnets under "NaturalS"
   - At least one interface on the router must have a manually assigned link local address

6. **SSH.**
   - Configure SSH for the campus network routers (do not include the ISP)

7. **HTTP.**
   - Choose one of your servers in the data center as an HTTP server
   - Change the homepage on your server to reflect https://www.mcgill.ca/ homepage (Include McGill logo, “welcome to McGill!”, …)

8. **FTP, Email and DNS.**
   - Choose 4 PCs, give them names as in Figure 1
   - Choose one server in the data center as an FTP server and create 4 users for FTP access for the 4 PCs
   - Add one email server in Physics department and one in Engineering department
   - Create for the 4 PCs email accounts on their respective email servers
   - Send an email from MrJones to MrsLoney and have her reply back
   - Send an email from MrGagnon to MrsSmith and have her reply back
   - Create a file in MrsSmith called “listToFire.txt” and put it on the file server
   - Choose one DNS server in the data center for the entire campus network and configure it

9. **Wireless Router.**
   - Configure the wireless SOHO router by considering the requirements in Figure 1
   - Enable highest level of security on the wireless SOHO router
   - Connect a laptop to the wireless SOHO router

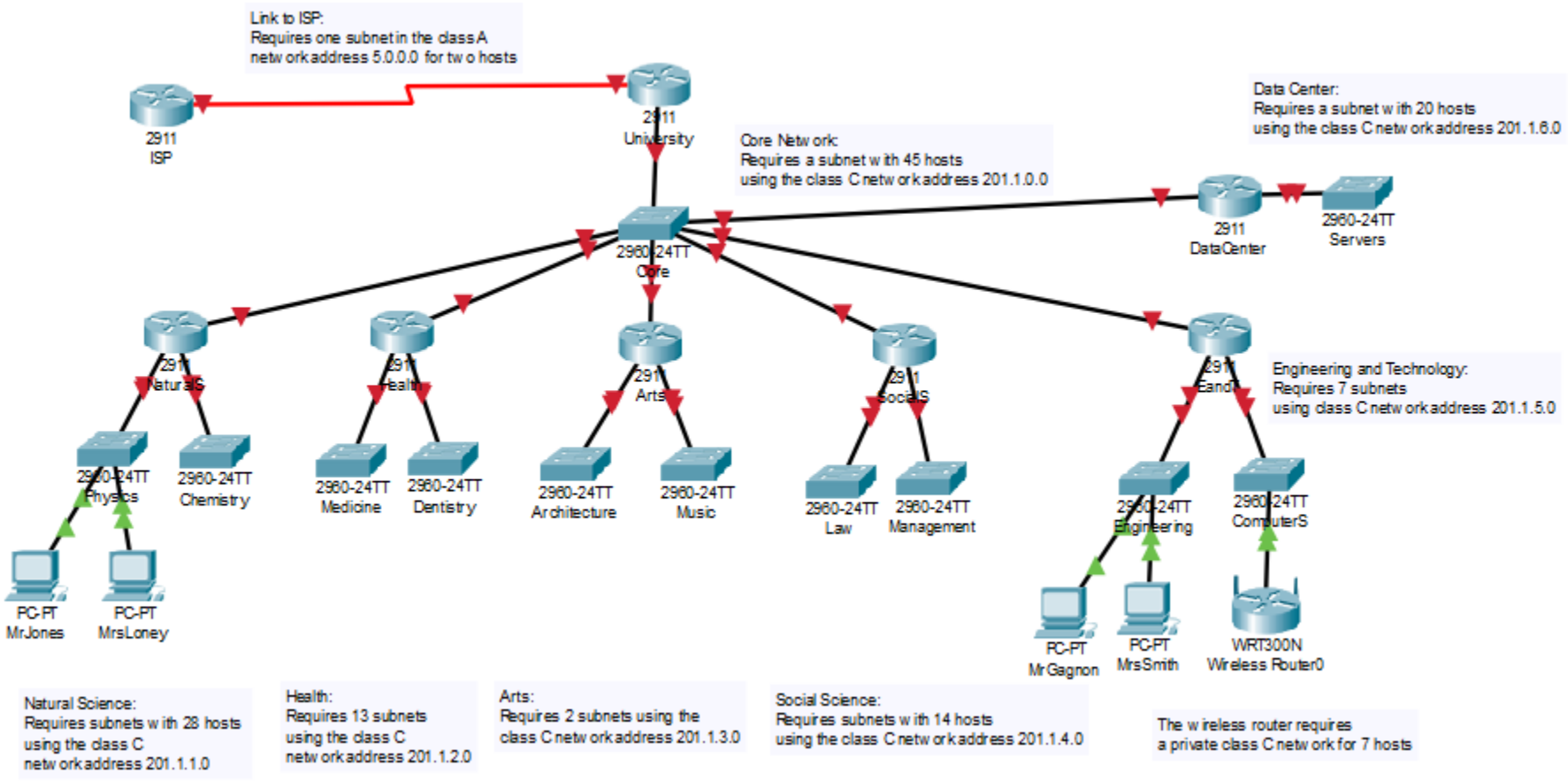

Figure 1: Network topology and requirements