



SEMESTER 1 SESSION 2021/2022

MINI PROJECT

BITS 2343 | COMPUTER NETWORK

INSTRUCTION:

1. For the Mini Project, each group is required to prepare and submit the following:
 - a. A video demonstration
 - b. A report
 - c. Packet Tracer file (*.pkt)
2. DUE DATE for submission is on WEEK 16 (SATURDAY | 15 JANUARY 2022 | 4.00 PM).
3. This project must be done in a group where a group consists of FIVE members. (see attachment)
4. Lecturer WILL NOT entertain any request for time extension!
5. Remember to COMMUNICATE A and CO-OPERATE among group members!

Guidelines for the video

1. The duration of the video must not be more than 20 minutes
2. The video must include the introduction of all group members
3. Each member must participate in the video presentation
4. The video must consist of screen recording and the face of all members of the group
5. The video must contain a demonstration/presentation of ALL requirements listed.
6. Each group must submit their video on YouTube and submit the link via ULearn

Guidelines for the report

1. The report for the Mini Project should include the following items:
 - a. Summary of the project – successful and failed
 - b. Topology Diagram and Addressing Table
 - c. Print out of the routers and switch configuration
 - d. Print out the samples to prove each requirement listed has been successfully configured.
 - e. Formatting – Standard report writing.
2. Each group must submit the softcopy of the report via ULearn

Please develop a simulation network system, as shown in Figure 1. Instructions and requirements for the implementation as follows:

Requirement 1: Assign all devices with IP address blocks that have been specified.

- a. HQ network with Network 192.168.X.128/25. X is your group number.
- b. BRANCHES network with Network 172.X.0.0/16. X is your group number.
 - i. Purple network required 16,000 addresses
 - ii. Green network required 4,000 addresses
- c. ISP address is 202.184.3.1/30 (Loopback)

Requirement 2: Configuring VLANs

VLAN for every host in HQ Network with VLAN Blue, Red or Orange

Requirement 3: Assigning switch ports to VLANs.

- a. Consider the IP addressing scheme and which computer should be in which broadcast domain or network.
- b. Configure the **trunk port** to connect to the router and **access port** to connect the switch ports to our clients' HOSTs or other network devices.
- c. Assign ports to the VLANs you created.

Requirement 4: Configure Router for InterVLAN routing

- a. At Router HQ, define sub-interfaces and the respective IP addresses.
- b. Define the VLAN assigned to the sub-interface using encapsulation dot1q VLAN_NUMBER, where the VLAN_NUMBER is the VLAN ID for the sub-interface.

Requirement 5: Configure Router with suitable routing protocol and Access Control List (ACL).

- a. Configure routing protocol at each router in BRANCHES and HQ network with RIPv2.
- b. Ensure all the HOSTs in the BRANCHES network can communicate between them and only to the Web server (Orange Server) in the HQ network.
- c. Identify the route each HOST passes through to communicate with other HOST in BRANCHES Network.
- d. All HOSTs in Red Network and Blue Network be able to communicate only between themselves inside its own VLAN and only to the Web server (Orange Server).

Requirement 6: Configure DHCP Server for networks

All HOST addresses must be configured using the DHCP server except all hosts in the Orange network. Red Server will assign addresses for Red VLAN while Blue Server for blue VLAN in the HQ network. The DHCP server for branches is Purple Server, which will assign addresses for the Green and Purple network. Use command "ip helper-address" to configure the router as a DHCP relay agent.

Requirement 7: Configure Web Server, DNS Server and Mail Server.

Configure a Web Server and DNS Servers with an appropriate configuration. Choose among the servers that are suitable to configure as a Mail Server.

Requirement 8: Customise the homepage.

Build a webpage "<group_name>.utem.edu.my" on the Web server containing photos and the name of your group members. **Good Luck!**

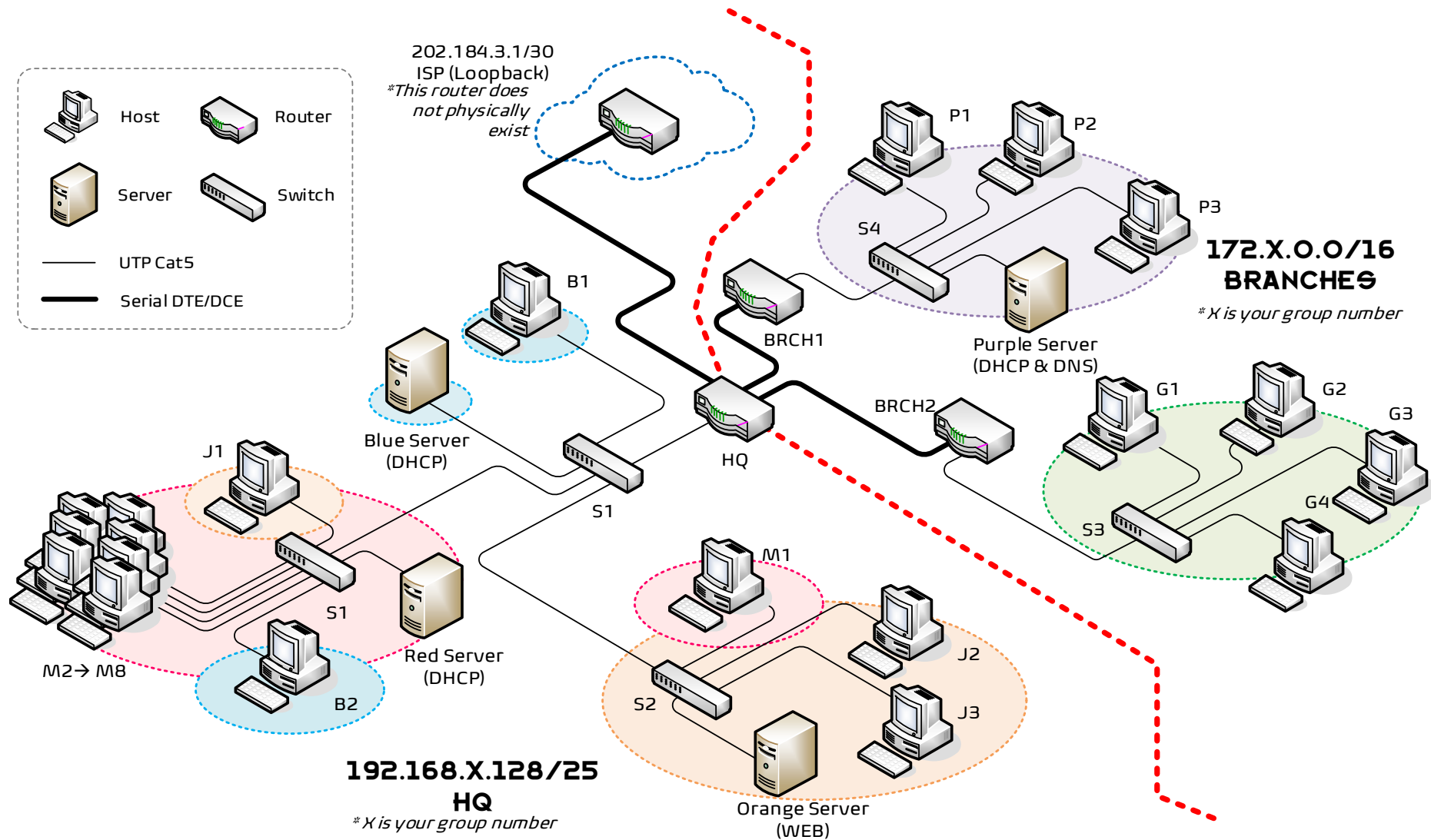


Figure 1: Network topology