School of Informatics & IT
AY 2023/2024 April Semester
Diploma in Infocomm and Digital Media
Data Communications and Networking (DCNK-C)
[Subject Code – CIML001]

PROJECT

(50%)

Scenario

You are the network administrator working for a company, SG-Network. The company is planning to have a new office located in Singapore. The company has planned to setup the network infrastructure with one Local Area Network (LAN) for HR department and two VLAN (Virtual LAN) for BR department. The network topology for the company is shown in Figure 1.

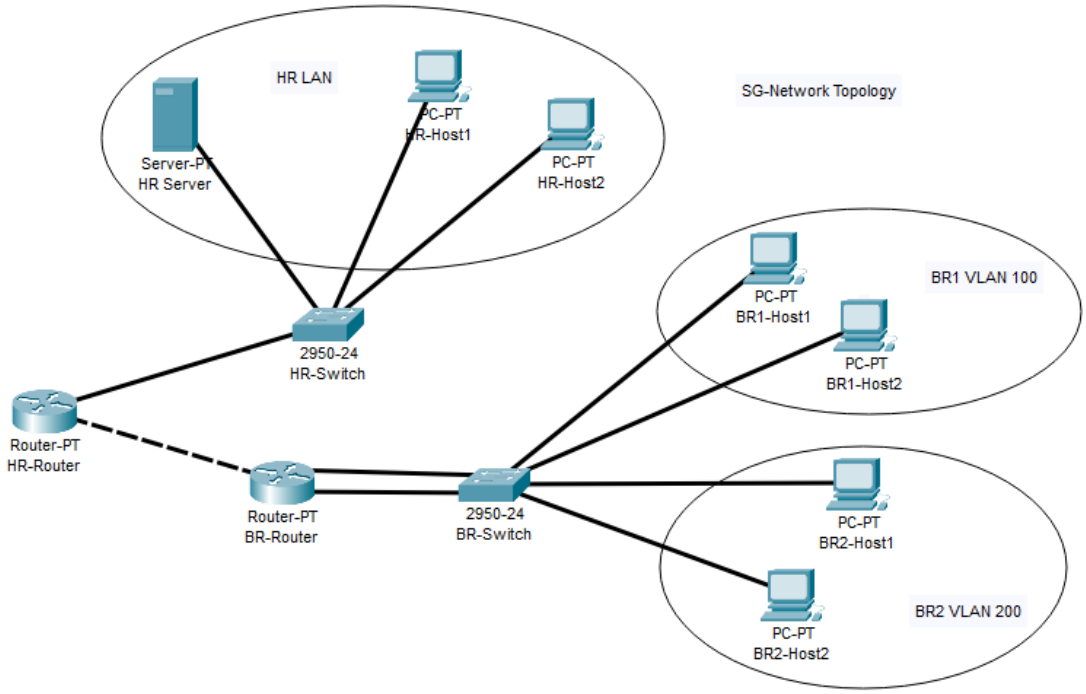

Figure 1

Tasks

1. You are tasked to form a project team consists of 3 to 4 members to design the IP addressing plan, with provision of future growth, for the new office at Singapore. The IP Address for Singapore office will be assigned to your team according to Appendix A. You may use the following Tables for the documentation of the network.

	Network Address	Range of Assignable IP Addresses	
		From	To
HR LAN	183.53.0.0	.0.1	.31.254
BR1 VLAN 100	183.53.32.0	.32.1	.63.254
BR2 VLAN 200	183.53.64.0	.64.1	.95.254
HR to BR	183.53.96.0	.96.1	.127.254
Spare Networks	183.53.128.0 183.53.180.0 183.53.192.0 183.53.224.0	.128.1 .160.1 .192.1 .224.1	.159.254 .191.254 .223.254 .255.254

Table 1: IP Address Pool for LANs

Network	Router	Interface	IP address
HR LAN	HR-Router	f 0/0	183.53.0.1
BR1 VLAN 100	BR-Router	f 1/0	183.53.32.1
BR2 VLAN 200	BR-Router	f 9/0	183.53.64.1
HR to BR	HR-Router	f 0/0	183.53.96.1
	BR-Router	f 0/0	183.53.96.2

Table 2: Interface used and IP addresses

Host	IP Address / Subnet Mask	Default Gateway Address
HR-Host1	183.53.0.3	183.53.0.1
HR-Host2	183.53.0.4	183.53.0.1
BR1-Host1	183.53.32.2	183.53.32.1
BR1-Host2	183.53.32.3	183.53.32.1
BR2-Host1	183.3.64.2	183.53.64.1
BR2-Host2	183.53.64.3	183.53.64.1
HR Server	183.53.0.2	183.53.0.1

Table 3: Host IP addresses

	Range of Switch Ports assigned to VLAN	
	From	To
BR1 VLAN 100	f 0/3	f 0/4
BR1 VLAN 200	f 0/5	f 0/6

Table 4: BR-Switch Ports Assignment

2. You are required to use Packet Tracer Simulation package to setup the network topology and configure all the routers, switches and hosts. All network devices must be configured with appropriate security passwords.

Deliverables

Part 1: Report (20%) – **Week 18**

Submit **ONE** detailed group project report consists of the following documentation.

1. Network topology diagram (with properly labels on the routers, switches interfaces and network devices).
2. IP addressing design documentation (with Tables 1 to 4 properly filled up) and the working of the IP addressing.
3. Documentation of all the security passwords configured on network devices.
4. Step-by-step explanation of the commands used to configure the network devices. E.g., commands used to configure the router interfaces, routing protocol, security passwords, VLAN on switch, etc.
5. Relevant running configurations for all the routers and switches on the network. Attach the listing of each device running configurations as Appendixes.
6. Packet Tracer file that contains the working network infrastructure for the company.
7. Screenshot of the routers' routing table and switch's VLAN information.
8. Screenshot of Ping results to show that each host in the VLAN is able to reach the HQ Server.
9. Any additional relevant documentation.

Part 2: Presentation and Q&A (30%) **Week 18**

Your group is required to do a presentation on the network configuration and questions will be posted.

--------- End of Project ---------

Appendix A

IP Address assigned to Singapore office.

Group No:	IP Address
1	161.31.0.0
2	172.42.0.0
3	183.53.0.0
4	154.64.0.0
5	145.75.0.0
6	136.86.0.0