Muhammad Izham Bin Norhamadi
B032020039

LAB 11 - Exercise:
Dynamic Routing Roles in a Scalable Network

Learning Objectives

Upon completion of this lab, you will be able to:

- Determine the number of subnets needed using VLSM technique.
- Determine the number of hosts needed.
- Design an appropriate addressing scheme.
- Assign addresses and subnet mask pairs to device interfaces and hosts.
- Examine the use of the available network address space.
- Determine how dynamic routing could be applied to the network.

Scenario

Given the network address 202.1.3.0/24 to subnet and provide the IP addressing for the network shown in Figure 1. The network has the following addressing requirements:

- The LAN 1 require 4 IP addresses. /28
- The LAN 2 require 7 IP addresses. /28
- The LAN 3 require 10 IP addresses. /28
- The LAN 4 require 11 IP addresses. /28
- The LAN 5 require 30 IP addresses. /27
- The link between routers require an IP address for each end of the link. /30 /30 /30

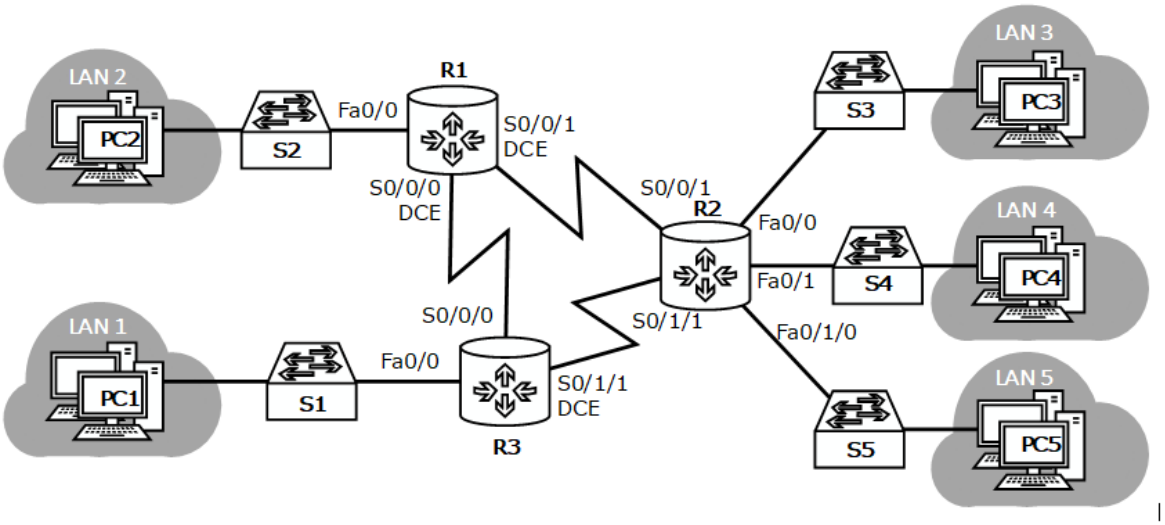


Figure 1 Topology Diagram

1: Examine the Network Requirements.

Examine the network requirements. Keep in mind that IP addresses will be needed for each of the LAN interfaces.

Muhammad Izham Bin Norhamadi
B032020039

2: Design an IP Addressing Scheme.

Based on scenario above, determine all usable IP addresses using Variable Length Subnet Masking (VLSM) technique and complete Table 1.

Table 1 IP Addressing scheme

Network	Subnet Address	First Usable Host Address	Last Usable Host Address	Broadcast Address
LAN1	202.1.3.16	202.1.3.17	202.1.3.30	202.1.3.31
LAN2	202.1.3.32	202.1.3.33	202.1.3.46	202.1.3.47
LAN3	202.1.3.48	202.1.3.49	202.1.3.62	202.1.3.63
LAN4	202.1.3.64	202.1.3.65	202.1.3.78	202.1.3.79
LAN5	202.1.3.96	202.1.3.97	202.1.3.126	202.1.3.127
R1R2	202.1.3.4	202.1.3.5	202.1.3.6	202.1.3.7
R1R3	202.1.3.0	202.1.3.1	202.1.3.2	202.1.3.3
R2R3	202.1.3.8	202.1.3.9	202.1.3.10	202.1.3.11

3: Assign IP Addresses to the Network Devices

Use the Packet Tracer to build the topology and assign the appropriate addresses to the device interfaces. Document the addresses to be used in the Addressing Table provided in Table 2.

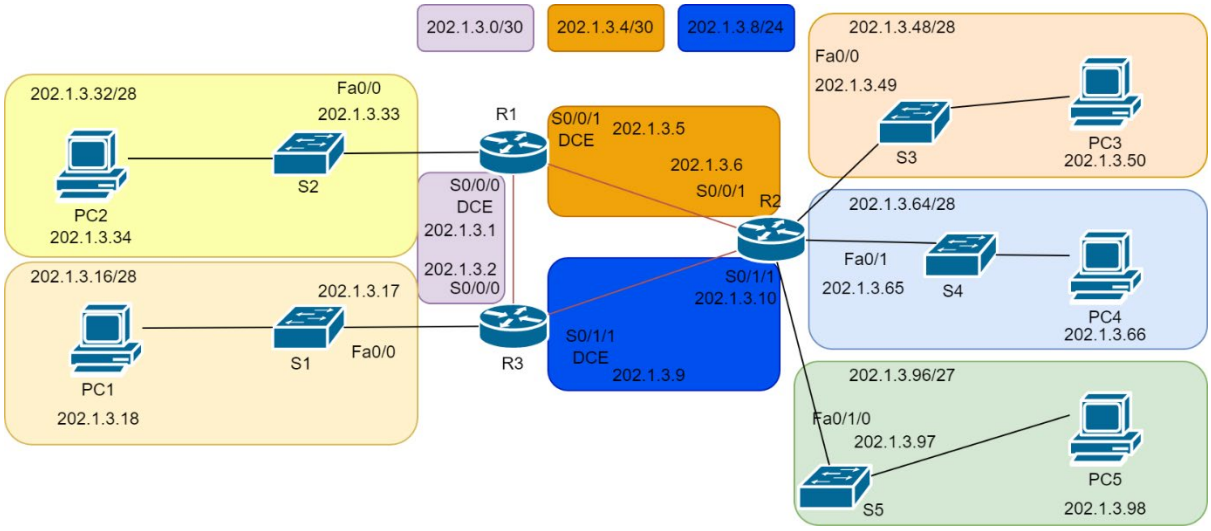
Table 2 Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	Fa0/0	202.1.3.33	255.255.255.248	N/A
	S0/0/0	202.1.3.1	255.255.255.252	N/A
	S0/0/1	202.1.3.5	255.255.255.252	N/A
R2	Fa0/0	202.1.3.49	255.255.255.248	N/A
	Fa0/1	202.1.3.65	255.255.255.248	N/A
	Fa0/1/0	202.1.3.97	255.255.255.248	N/A
	S0/0/1	202.1.3.6	255.255.255.252	N/A
	S0/1/1	202.1.3.10	255.255.255.252	N/A
R3	Fa0/0	202.1.3.17	255.255.255.240	N/A
	S0/0/0	202.1.3.1	255.255.255.252	N/A
	S0/1/1	202.1.3.9	255.255.255.252	N/A
PC1	NIC	202.1.3.18	255.255.255.240	202.1.3.17
PC2	NIC	202.1.3.34	255.255.255.240	202.1.3.33
PC3	NIC	202.1.3.50	255.255.255.240	202.1.3.49
PC4	NIC	202.1.3.66	255.255.255.240	202.1.3.65
PC5	NIC	202.1.3.98	255.255.255.224	202.1.3.97

4: Test the Network Design.

If all routers on the new network are requested to be configured by RIPv2 Routing protocol, use the Packet Tracer and apply your addressing scheme. Check to see that all devices on directly connected and remote networks can communicate (ping) each other. Complete all tasks in **complete network schematic diagram** and **packet tracer file**.

Muhammad Izham Bin Norhamadi
B032020039



Network Schematic Diagram