LAB 7
Network Addressing

Learning Objectives

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

- Determine the number of subnetworks needed.
- Determine the number of hosts needed.
- Design an appropriate classless addressing scheme using basic subnetting
- Design an appropriate classless addressing scheme using the VLSM technique

Scenario 1

Figure 1 shows the topology diagram with classfull IP addressing schemes. Implement a scalable network to provide the IP addressing by using address block **193.128.56.0/24**. The subnetwork has the following addressing requirements:

- The LAN 1 – 32 workstations.
- The LAN 2 – 16 workstations.
- The LAN 3 – 5 workstations.

Note:

Remember that the interfaces of network devices are also need IP addresses and must be included in the addressing requirements.

e.g.: requirement no of addresses for LAN 1 = 35 addresses

32 + 2 + 1 (Workstation add.s + Network add. + Broadcast add. + Gateway add.)

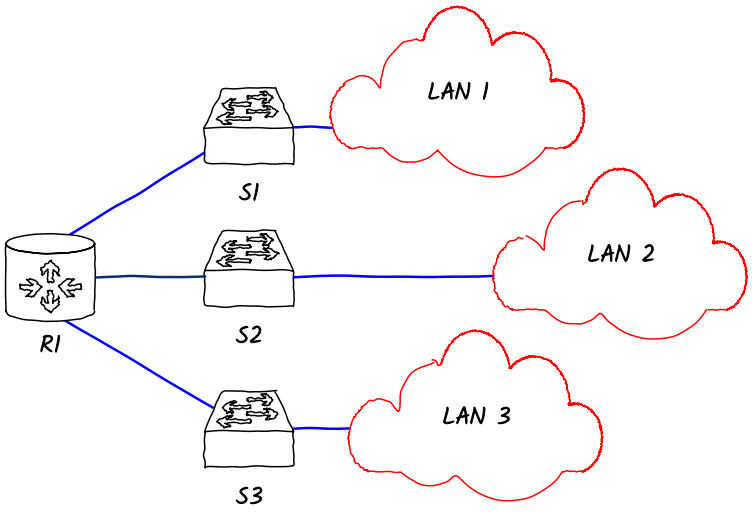


Figure 1 Topology Diagram

Design an IP Addressing Scheme.

Based on the scenario above, determine all available IP addresses using the basic subnetting technique in Table1 while Variable Length Subnet Masking (VLSM) technique in Table 2.

TIPS: *Basic subnetting has the same number of addresses for every subnetwork created.*

A. Fill in the following table with the subnetwork information.

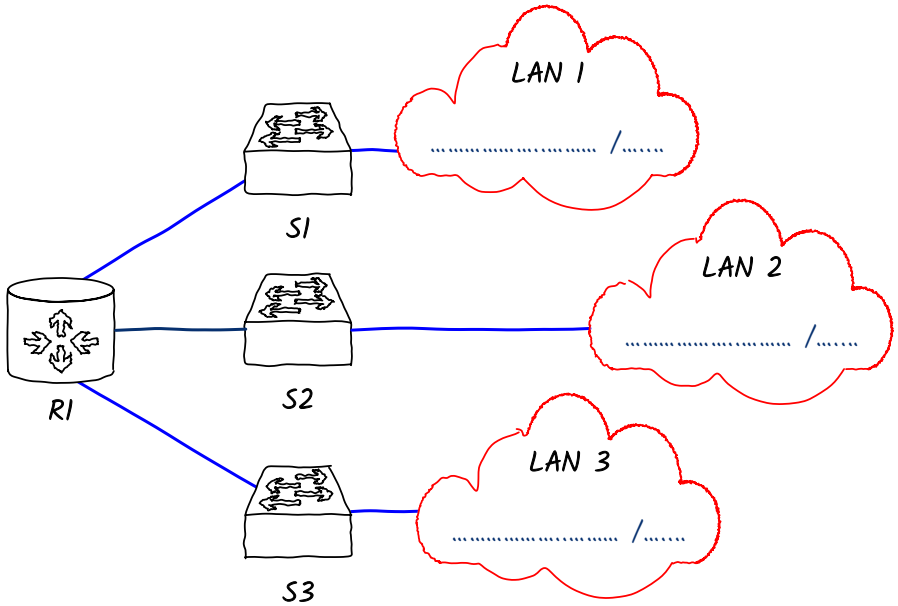
Table 1: IP Addressing scheme by basic subnetting technique

Subnetwork Number	Network Address	First Usable Host Address	Last Usable Host Address	Broadcast Address

Examine Network Requirements.

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

1. How many subnetworks are required?
2. Which subnetwork owns the highest number of IP addresses?
3. What is the total number of allocated IP addresses for the LANs?
4. How many IP addresses successfully saved for future needs?



B. Fill in the following table with the subnetwork information.

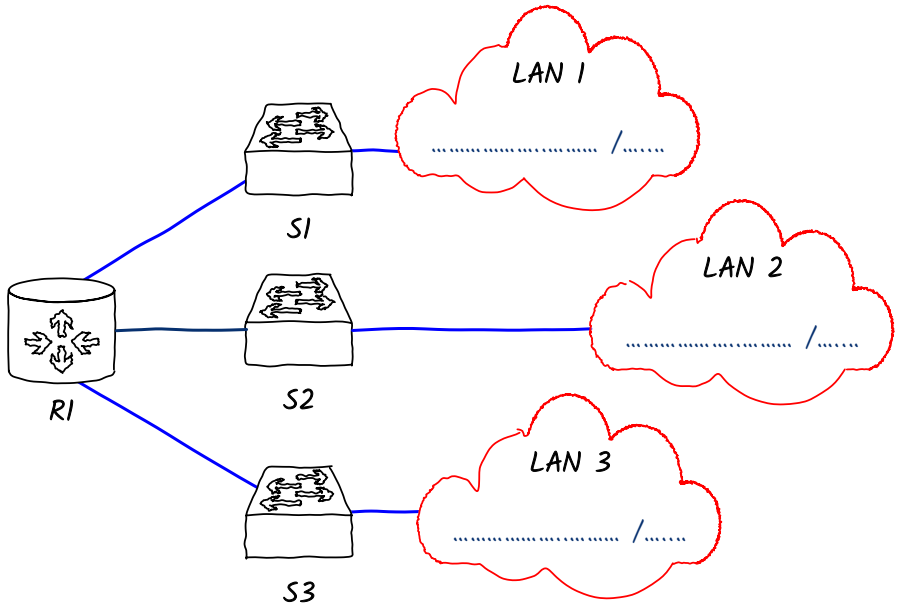
Table 2: IP Addressing scheme by VLSM technique

Subnetwork Number	Network Address	First Usable Host Address	Last Usable Host Address	Broadcast Address

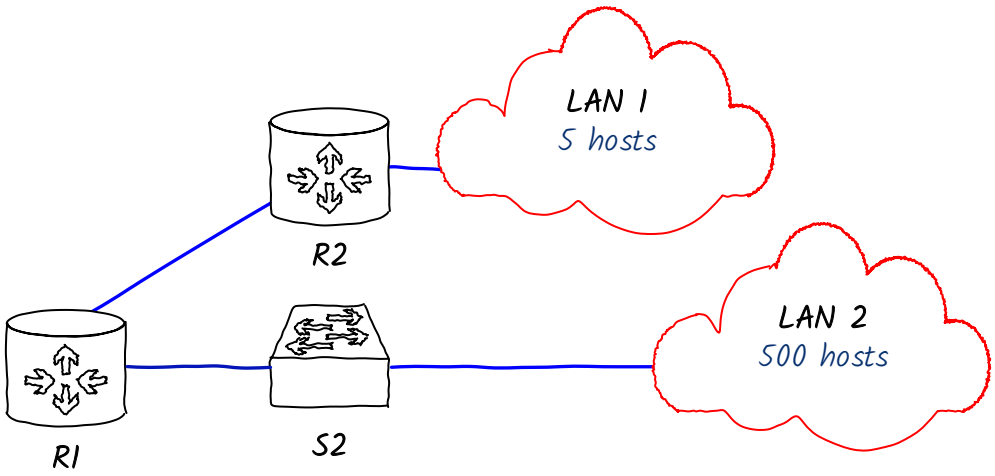
Examine Network Requirements.

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

1. How many subnetworks are needed?
2. Which subnetwork owns the highest number of IP addresses?
3. What is the total number of allocated IP addresses for the LANs?
4. How many IP addresses successfully saved for future needs?



Scenario 2



Implement a scalable network to provide the IP addressing by using address block **190.1.0.0/22**. Based on the scenario above, determine all available IP addresses using the Variable Length Subnet Masking (VLSM) technique.

Examine Network Requirements.

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

1. How many subnetworks are needed?
2. Which subnetwork owns the lowest number of IP addresses?
3. What is the total number of allocated IP addresses for LANs?
4. How many IP addresses successfully saved for future needs?