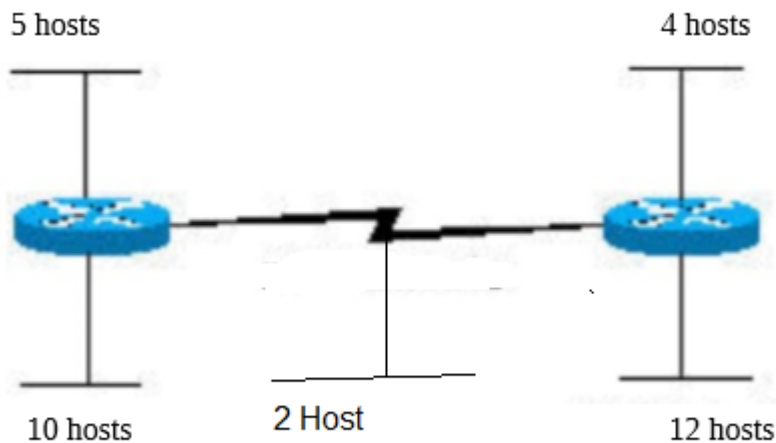


Lab 7 –IP Subnetting



Q.1 How many subnets are in this topology? (1 mark)

Q. 2. Given 209.16.0.0 (class C n/w address), find subnet based on the requirement of subnets.

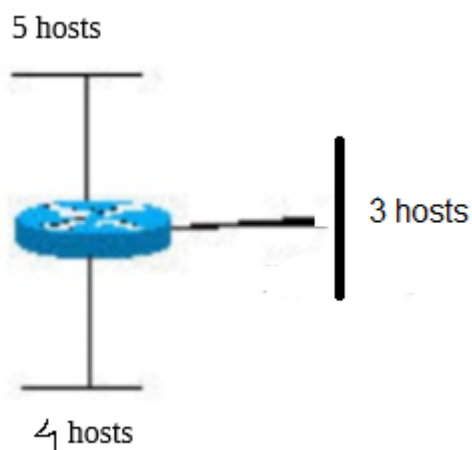
Show the following (3 mark)

- a) new subnet mask and its /X representation
- b) list of subnets and their ranges
- c) list usable host addresses for each of the subnets.

In packet Tracer

Q.3 Implement following Topology using same Subnets you identify in previous Questions.

(any 3 subnets and their host addresses) (take Screenshot of your topology) (10 marks)



Q.4 In packet tracer find Answers of the following Question (8 marks)

1. Assign IP address to different host according to
2. How many addresses will routers have?
3. Assign the router correct IP addresses
4. Ping and show that the hosts are able to communicate.

Now,

Basic understanding of VLSM :

Objective :

You have a class C network address to work with and must make the best use of the address space while minimizing wasted addresses. To accomplish this you will develop an IP addressing scheme using Variable Length Subnet Masks (VLSM) to allocate IP addresses to the LANs in the network. And in the Next lab we are going to implement VLSM topology.

Step 1. Design an IP Addressing Scheme Using VLSM

Starting with the Class C network address of 192.168.1.0/24, create subnets to allocate IP addresses to the Ethernet LAN. The design requirements for the number of addresses are listed in the table below. Use VLSM to minimize wasted IP addresses. Assume ip subnet-zero is enabled and that the first subnet (all zeros) and last subnet (all ones) can be used.

(As a general rule it is best to first allocate subnets to the networks with the largest number of required hosts starting from the lowest subnet number and working up.)

Q.5 Fill Details In Following Table. (5 mark)

Address Area	Number of IP Addresses	32 Bit Address Prefix and Slash (/) Bit Mask	32 Bit Dotted Decimal Subnet Mask
Class C Network Assigned	256 total (254 useable)	192.168.1.0 / 24	255.255.255.0
Router 0 LAN	55 hosts		
Router 1 LAN	26 hosts		
Router 2 LAN	12 hosts		
Router 0-1 WAN	2 hosts		
Router 1-2 WAN	2 hosts		

Q.6. Consider a class C network with 4 subnets each with 75,35,25,15 hosts. What will be the subnet masks for 4 subnets, and host IP address Range in each subnet? (3 mark)