Lab 3 : Routing and switching
Lecturer : Prof. Oumaima FADI
T.A: Prof. Abdoulghaniyu HARAZEEM

Lab 3 – Routing and switching

Objective:

The goal of this lab is to set up a network between different machines and learn how to perform the necessary network configurations.

We will focus on the following:

- IP addressing configuration on Linux and Windows machines;
- Discovering network commands and configuration files;
- Learning about ARP and ICMP protocols;
- Using Linux sniffer tools like tcpdump and Wireshark.

Instructions:

- No need for report for this lab.

Exercise 1

Having acquired the following IPv4 address range: **208.10.3.0/24**, a web hosting company wants to create **data centers of 25 servers each**.

(a) How many subnets will result?
(b) What is the new prefix and subnet mask?
(c) What are the IP addresses of the first and last subnets?

Exercise 2

A multinational company plans to create **120 subnets around the world** using the following IP address range: **172.32.0.0/20**.

(a) How many hosts can each subnet have?
(b) Calculate the addresses of the first three subnets.
(c) Calculate the broadcast addresses of the first three subnets.
(d) Give the range of IP addresses that can be assigned to hosts in the first three subnets.

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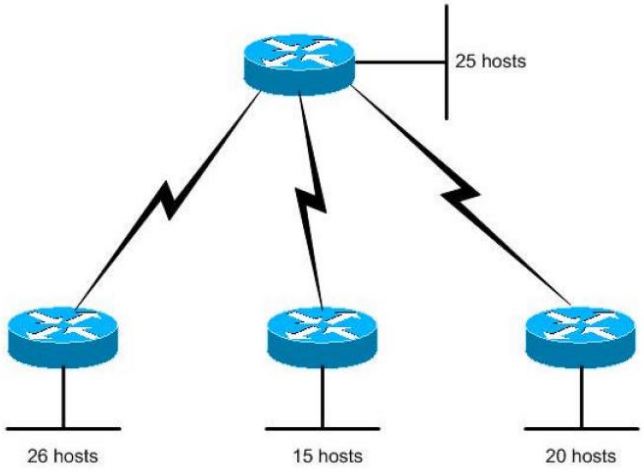
Exercise 3

(a) A router interface has the IP address **172.16.192.166** with subnet mask **255.255.255.248**. To which subnet does this IP address belong?
(b) What is the network address of the host **172.25.67.99 /23**?

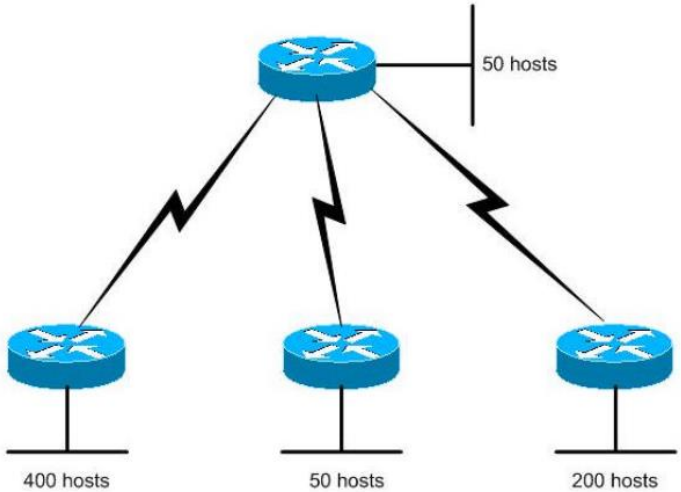
Exercice 4

The address 192.168.15.0 /24 is assigned and must support the network shown in the diagram. Create an addressing scheme that meets the requirements of the diagram



Exercise 5

The address 192.168.24.0 /22 is assigned and must support the network shown in the diagram. Create an addressing scheme that meets the requirements of the diagram.



- Lab 1 : Routing and switching
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