# Lab - Design and Implement a VLSM Addressing Scheme

Absen 1 – 4

| Nama | |
|------|--|
| Kelas | |

**Topology**
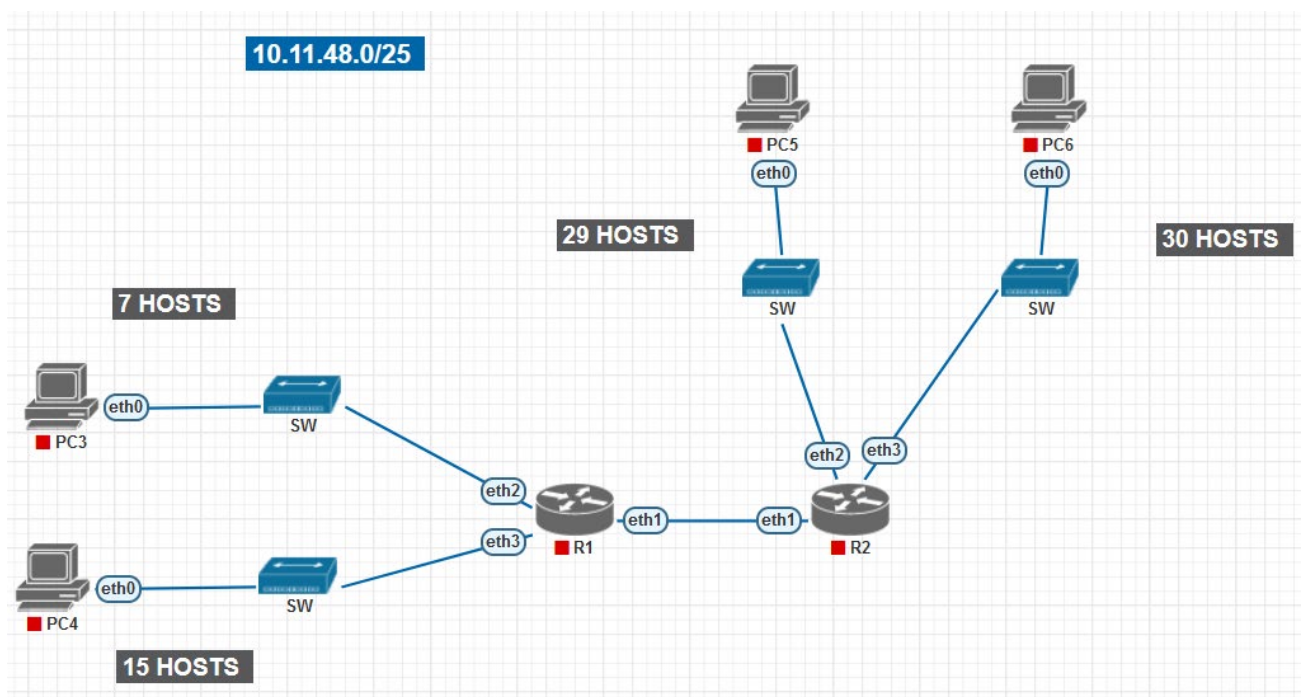


**Objectives**

Part 1: Examine Network Requirements

Part 2: Design the VLSM Address Scheme

Part 3: Assign IP Addresses to Devices

**Background / Scenario**

Variable Panjang Subnet Mask (VLSM) dirancang untuk menghindari pemborosan alamat IP. Dengan VLSM, sebuah jaringan adalah disubnet dan kemudian disubnet ulang. Proses ini dapat diulang beberapa kali untuk membuat berbagai subnet ukuran berdasarkan jumlah host yang dibutuhkan di setiap subnet. Penggunaan VLSM yang efektif memerlukan alamat perencanaan.

**Required Resources**

- Alat tulis

**Instructions**

**Part 1: Examine Network Requirements**

Di Bagian 1, Anda akan memeriksa persyaratan jaringan untuk mengembangkan skema alamat VLSM untuk jaringan ditampilkan dalam diagram topologi.

Catatan: Anda dapat menggunakan aplikasi Kalkulator atau terjemahan. Untuk membantu perhitungan Anda

**Step 1: Determine the number of subnets needed.**

You will subnet the network address 10.11.48.0/25. The network has the following requirements:

R1 R2 link will require 2 host IP addresses

SW-1 LAN will require 29 host IP addresses

SW-2 LAN will require 30 host IP addresses

SW-3 LAN will require 7 host IP addresses

SW-4 LAN will require 15 host IP addresses

a) How many subnets are needed in the network topology? _____
b) What is the total number of host addresses needed in the topology diagram? _____

**Step 2: Determine the subnet mask information for each subnet.**

a) Which subnet mask will accommodate the number of IP addresses required for SW-1 LAN?

_____ <span style="color:red">(Example : 255.255.128.0 /17)</span>

How many usable host addresses will this subnet support?

_____ <span style="color:red">(Example : 254 (10.11.48.1 - 10.11.48.254))</span>

b) Which subnet mask will accommodate the number of IP addresses required for SW-2 LAN?

_____

How many usable host addresses will this subnet support?

_____

c) Which subnet mask will accommodate the number of IP addresses required for SW-3 LAN?

_____

How many usable host addresses will this subnet support?

_____

d) Which subnet mask will accommodate the number of IP addresses required for SW-4 LAN?

_____

How many usable host addresses will this subnet support?

_____

e) Which subnet mask will accommodate the number of IP addresses required for the connection between R1 and R2?

_____

**Part 2: Design the VLSM Address Scheme**

**Step 1: Divide the 10.11.48.0/25 network based on the number of hosts per subnet.**

<span style="color:red">Note: Please read the following instruction to answer step 2</span>

a) Use the first subnet to accommodate the largest LAN.
b) Use the second subnet to accommodate the second largest LAN.
c) Use the third subnet to accommodate the third largest LAN.
d) Use the fourth subnet to accommodate the fourth largest LAN.
e) Use the fifth subnet to accommodate the connection between R1 and R2.

**Step 2: Document the VLSM subnets.**

| Deskripsi Subnet | Jumlah Host yang Dibutuhkan | Network Address/CIDR | Alamat Host Pertama yang Dapat Digunakan | Alamat Host Terakhir yang Dapat Digunakan | Broadcast Address |
|---|---|---|---|---|---|
| | | | | | |
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**Part 3: Assign IP Addresses to Devices**

a) Fill in the following table with IP addresses and subnet masks for the router interfaces:

| Device | Interface | IP Address | Subnet Mask |
|---|---|---|---|
| R1 | Ether1 | | |
| | Ether2 | | |
| | Ether3 | | |
| R2 | Ether1 | | |
| | Ether2 | | |
| | Ether3 | | |

b) Fill in the following table with the IP addresses and subnet masks for devices in the LAN as displayed in topology.

Note: Please read the following instruction to answer

1. Assign the last usable IP addresses to the PC3
2. Assign the last usable IP addresses - 2 to the PC4 (Subtraction)
3. Assign the last usable IP addresses - 3 to the hosts (Subtraction)
4. Assign the last usable IP addresses - 4 to the hosts (Subtraction)

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|--------|-----------|-----------|-------------|-----------------|
| PC3 | NIC | | | |
| PC4 | NIC | | | |
| PC5 | NIC | | | |
| PC6 | NIC | | | |