VLSM Network Design Report

1. Project Title

Variable Length Subnet Masking (VLSM) - Network Design and Configuration

2. Objective

To design and implement a network using Variable Length Subnet Masking (VLSM) in Cisco Packet Tracer. The goal is to allocate IP addresses efficiently and configure routing between multiple networks.

3. Topology Overview

This project includes multiple routers, switches, and PCs. Each router connects to a specific subnet, and routing is configured to enable communication across the network.

4. IP Addressing Scheme (VLSM Table)

Subnet	Network Address	Subnet Mask	Range	Broadcast	Hosts
Subnet A	192.168.10.0	/28	192.168.10.1 - 192.168.10.14	192.168.10.15	14
Subnet B	192.168.10.16	/29	192.168.10.17 - 192.168.10.22	192.168.10.23	6
Subnet C	192.168.10.24	/30	192.168.10.25 - 192.168.10.26	192.168.10.27	2
Subnet D	192.168.10.28	/30	192.168.10.29 - 192.168.10.30	192.168.10.31	2

5. Device Configuration Summary

Router R1

```
enable conf t interface g0/0 ip address 192.168.10.1
255.255.255.240 no shutdown exit ip route 192.168.10.16
255.255.255.248 192.168.10.2
```

Router R2

```
enable conf t interface g0/0 ip address 192.168.10.17
255.255.255.248 no shutdown exit ip route 192.168.10.0
255.255.255.240 192.168.10.1
```

(More configurations can be added as per actual setup)

6. Routing Configuration

Static routing has been implemented between routers. Each router is manually configured with static routes to reach other networks.

7. Testing and Results

Ping Results

- PC0 to PC1: **Success**
- PC0 to PC2: **Success**
- PC1 to PC2: **Success**

All pings between the networks succeeded, confirming correct routing configuration.

8. Conclusion

This VLSM implementation demonstrates efficient IP address allocation using custom subnetting. All devices are successfully connected, and static routing ensures full communication across the network.

Generated by: Aditi Shyam Pandit (Cybersecurity Student)