

VLSM (Variable Length Subnet Mask):

Definition: VLSM is a technique used in IP network design to create subnets with different subnet masks. Unlike FLSM, which uses fixed-size subnets, VLSM allows network administrators to allocate IP addresses more efficiently by using smaller subnet masks for subnets with fewer hosts and larger subnet masks for subnets with more hosts¹.

Advantages:

1. VLSM enables precise allocation of IP addresses based on actual requirements, avoiding wastage making it efficient in IP address utilization
2. VLSM is very flexible that it allows different-sized subnets can coexist within the same network
3. VLSM's scalability adapts well to network growth and changing needs.

Disadvantages:

1. VLSM Requires careful planning and management due to variable subnet sizes.
2. VLSM is very complex that involves more detailed calculations and design considerations compared to FLSM.

FLSM (Fixed-Length Subnet Mask):

Definition: FLSM creates subnets of equal size, each with the same number of IP addresses. While it is simple, it can lead to IP address wastage when subnets have varying requirements.

Advantages:

1. FLSM is very simple, making it easy to implement and understand.
2. Predictable subnet sizes.

Disadvantages:

1. Subnets may have more addresses than needed making it inefficient in IP address utilization
2. FLSM lacks flexibility that it requires all subnets must be the same size.
3. Doesn't scale well for diverse network requirements.

[illegible]

UC SCENARIO

VLSM Approach

1. Arrange requirements in descending order
Junior High School (100) > Elementary (50) > Kindergarten (30).
2. Allocate subnets based on block size
Junior High School: 192.168.1.0/25 (126 usable addresses)
Elementary: 192.168.1.128/26 (62 usable addresses)
Kindergarten: 192.168.1.192/27 (30 usable addresses)

Justification: VLSM optimally uses IP addresses, accommodating varying department needs.

FLSM Approach:

1. Use a fixed subnet mask (for example /24) for all subnets.

Junior High School (JHS):
Requires 100 IP addresses.
Subnet: 192.168.1.0/24 (254 usable addresses)

Elementary:
Requires 50 IP addresses.
Subnet: 192.168.1.1/24 (254 usable addresses)

Kindergarten:
Requires 30 IP addresses.
Subnet: 192.168.1.2/24 (254 usable addresses)

Justification:

1. FLSM fits within the subnet of JHS, ELEMENTARY, and KINDERGARTEN with no to little loss of IP addresses.
2. Each subnet would have 254 usable addresses, leading to IP wastage for smaller departments.

Not suitable for this scenario due to inefficiency.

Conclusion: VLSM is more suitable for this scenario because it efficiently allocates IP addresses based on specific department requirements. It allows for flexible subnet sizes, making it ideal for the University of the Cordilleras' network