

Assignment-3

computer network

Name : P. Dhruvhanvirath

Reg No : 192521216

Subject : computer
Network

Sub.code : CSA0735

ASSIGNMENT-3

Scenario :

A board 100 schools each with 3 segment :
lab, admin, guest.

Parameters :

- * subnet planning
- * IPV4 address allocation
- * VLSM

Questions :

1) How many total subnets are needed for 100 school x 3 subnets each?

To find the total number of subnets needed, you simply multiply the number of schools by the number of subnets per school : $100 \text{ schools} \times 3 \text{ subnet / school} = 300 \text{ subnets}$.

2. What's the total IP requirement if each of the subnets needs 60 hosts?

To support 60 hosts per subnet, you need a minimum of 64 IP addresses per subnet. This is because each subnet needs to account for the network address and broadcast address, which are not usable for hosts. Therefore, a subnet with 60 usable hosts requires 62 addresses (60+2). The smallest power of 2 that accommodates 62 is 64 (2^6), with 6 bits for host addresses. You are borrowing 2 bits from the default class C/24 network, resulting in a 26 subnet mask. This means you need 8 subnets, each with 64 IP addresses, which amounts to a total of 512 IP addresses.

5. What is the subnet mask for 60 hosts?

A subnet mask of 255.255.255.192 or /26 is suitable for accommodating 60 hosts. This allows for 62 usable host addresses per subnet, which is enough for 60 hosts plus the network and broadcast addresses.

Explanation:

Host Formula:

The number of hosts a subnet can support is calculated using the formula: $2^n - 2$, where 'n' is the number of host bits.

Subnet mask in Binary:

A subnet mask with 6 host bits will have the last 6 bits to 0. In binary 11111111.11111111.11111111.00000000

Subnet mask in Decimal:

Converting the binary representation to decimal you get 255.255.255.192.