3- subnetting

- minimizes the wastage of IP addresses

- 2 methods
    - FLSM

    - VLSM

> ### 🔥 Formulas
>
> Subnetting can be done based on the requirement.
> Requirement of Hosts?
> *$2^h - 2 \geq$ requirement*
> Requirement of Networks?
> *$2^n \geq$ requirement*
> Number of Subnets
> *$2^{number\ of\ host\ bits}$*

What we do in Subnetting

- Converting Host into Network Bits (reduce number of host bits)

- Converting 0's into 1's.

Exercise

C-class, Req = 50 hosts (FLSM)

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> *$2^{number\ of\ host\ bits}$*

2^1	2	2^8	256
2^2	4	2^9	512
2^3	8	2^{10}	1024
2^4	16	2^{11}	2048
2^5	32	2^{12}	4096
2^6	64	2^{13}	8192
2^7	128	2^{14}	16384

```
2^6 - 2 ≥ 50.
```
62 - Valid Hosts

Required Host Bits

```
power value will be the host bits.
```
6

Number of Subnets - 2^2 = 4.

```
N.N.N.H
11111111 . 11111111 . 11111111 . 11000000
8 + 8 + 8 + 2 =
```
26 Network bits

```
Class B = 24/8 ⟹
```
26/6

Subnet mask - 255 . 255 . 255 . 192

Range (Size of the network)

> 🔥 **Formulas**
>
> ```
> Subnetting can be done based on the requirement.
> Requirement of Hosts?
> ```
> *2^h - 2 ≥ requirement*
> ```
> Requirement of Networks?
> ```
> *2^n ≥ requirement*
> ```
> Number of Subnets
> ```
> *2^number of host bits*

```
2^h = 2^6 =
```
64 Networks

Number of Networks

- 0 - 63

- 64 - 127
- 128 - 191
- 192 - 255

Ip addresses

- an ip address is a 32 bit binary form.
- the address can be divided into 4 octets.