

## ASSIGNMENT - 2

## AIM : SUB-NETTING AND SUPER-NETTING

PROBLEM STATEMENT : USING A NETWORK SIMULATOR, CONSTITUTE SUB-NETTING AND SUPER-NETTING OF GIVEN NETWORKS.

## THEORY :

## • SUBNETTING :

- Subnetting is a process of dividing large N/w into smaller N/w's based on layers of IP address.

## • SUBNET MASK :

- Subnet mask is a 32-bit long address used to distinguish b/w N/w address & host address in IP address.
- Always used with IP address.
- Tells the N/w & host addresses apart.

e.g. IP address : 192.168.1.10

Subnet mask : 255.255.255.0

## • ADVANTAGES OF SUBNETTING :

- Breaks larger networks into smaller N/w's. Smaller N/w's are easier to manage.

Subnetting reduces N/w traffic by removing collision & broadcast traffic that overall improves performance.

- allows you to apply the security policies at the interconnection b/w subnets.
- allows you to save money by reducing requirement for IP range

- DEFAULT SUBNET MASK:

CLASS	SUBNET MASK	FORMAT
A	255.0.0.0	$N.N.N.N$
B	255.255.0.0	$N.N.N.N$
C	255.255.255.0	$N.N.N.N$
D	255	

- METHODS:

- i) Subnet for given address:  
Find default subnet mask Find host bits borrowed to create subnets
- ii) No. of subnets:  
A given subnet mask provides  $2^n$  subnets where  $n$  no. of bits borrowed from host bits to create subnets.
- iii)  $192.168.1.0 / 27 \Rightarrow N = 8$   
no. of subnets =  $2^3 = 8$

iii. Block size :

$$\text{Block size} = 256 - \text{subnet mask}$$

$$= 256 - 255.255.255.240$$

$$\text{Block size} = 256 - 240 = 16$$

iv. Find valid subnets

v. Total hosts :

$$2^H = \text{total hosts}$$

$$H = \text{no. of last bits}$$

vi. Valid host available per subnet

$$\text{valid hosts} = \text{total hosts} - 2$$

vii. Broadcast address of each subnet

host address of the subnet

viii. Mcw address of each subnet

First address of the subnet

• SUPERNETTING:

- Opposite of subnetting

- A single big mcw is divided into multiple subnets

- In supernetting, multiple small subnets are combined into a bigger mcw called supernet

### • CONCLUSIONS

In this assignment, we successfully implemented  
to use a network simulator 2 information about  
submitting