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There are 256 subnets and 1024 hosts per subnet.

[IP Address for different classes; C: 192.168.10.0, class B: 172.16.0.0, class A: 10.0.0.0]

i) which class of IP will be used?

ii) what will be the prefix?

iii) what will be the network ip Address of 117th subnet?

iv) what will be the ip Address of 1680th host of 117th subnet?

1. hence, 1 subnet id will have 8 bits (in)

i) 1024 hosts per subnet 10.0.0.1 - 10.0.0.1023

124 subnets 0.0.0.0 - 0.0.0.63

we know,  $2^7 = 128 > 124$   $2^7 = 128 > 1024$

so, we need 7 bit for hosts.

total 8 bits available for subnetting

for 124 subnets

$2^7 = 128 > 124$

so, we need 7 bits for Subnetting

subnet + hosts bit =  $7+11 = 18$  bits

But class B has 16 bits for subnet + hosts

and class C has 8 bits for subnet + hosts.

class A has 24 bits for subnet + hosts

so, class A of IP will be used.

class A of IP is = 10.0.0.0

ii) we get,

Subnet bit = 7

network bit = 8

prefix = subnet + network bit

$$= 7+8$$

= 15 bits

∴ prefix = 15 bits.

iii) A class A will be used.

$$IP = 10.0.0.0 \quad \text{host bits are 00000000}$$

$$10.0.0.0 \quad \text{host bits are 00000000}$$

$$00001010.0000000.00000000.00000000$$

N                sssssssshhhhhhhhhhhhhhhhh

host part has 11 bits in binary form.

For network IP Address 117<sup>th</sup> subnet,

$$128 \ 64 \ 32 \ 16 \ 8 \ 4 \ 2 \ 1$$

$$0 \ 1 \ 1 \ 1 \ 0 \ 1 \ 0 \ 1 \Rightarrow (117)_{10}$$

partitioned host bit & host subnet

so, now the IP is

this part - host + subnet + broadcast

$$\bullet 10.11101010.00000000.00000000$$

host + subnet part + host + subnet part

$$10.234.0.0$$

so, the network IP Address for 117<sup>th</sup> subnet is

$$10.234.0.0$$

0.0.0.1 to 0.0.0.1 to 0.0.0.1

iv) 117<sup>th</sup> subnet IP =

$$10.234.0.0$$

host no. 01

$$10.234.0.0000000.00000000$$

host no. 00000000

for 1680<sup>th</sup> host

$$1024 \ 512 \ 256 \ 128 \ 64 \ 32 \ 16 \ 8 \ 4 \ 2 \ 1$$

$$1 \ 1 \ 0 \ 1 \ 0 \ 0 \ 1 \ 0 \ 0 \ 0 \ 0 \ 0$$

$$= 1680$$

host number 10 present

IP address

so, now the IP will be, host address can be

10.234.00000110.10010000

10.234.6.144

host id 144 for hosts needed

for 1680<sup>th</sup> host consider 170<sup>th</sup> subnet in the IP Address

according to possible ip allocation 170<sup>th</sup> subnet from 1680<sup>th</sup> will be = 10.234.6.144

host id 144 for hosts needed for 1680<sup>th</sup> host