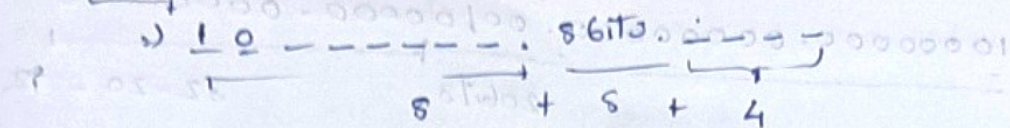


1) In class B given, 2 bits reserved

20 bits for Network ID



class B : 20 - 2 (10)

Network : 16 bits can be used

No. of Networks possible = 2^{16}

2) given Hexadecimal

C22F1582 → Binary

• 1100 0010 0010 1111 0001 0101 1000 0010
C 2 2 F 1 5 8 2

IPv4 Representation : 32 bits

Binary Rep

11000010.00101111.00010101.10000010

194.47.21.130 Dotted decimal Representation

3) Subnet Mask 255.255.240.0

11111111.11111111.11110000.00000000

Maximum number of hosts
IP addresses

Maximum no. of

hosts/usable

IP addresses = 4094

2) given ip addresses

(i) 128.2.32.0/20 and (ii) 24.130.0.0/15

a) $10000000.00000010.00100000.00000000$
 $\underbrace{\hspace{10em}}_{20 \text{ bits}} \quad \underbrace{\hspace{10em}}_{32-20=12}$

No. of host ip address = 2^{12}

No. of ip address usable = $2^{12} - 2 = 4096$

(ii) given prefix length = 15

Total ip addresses = $32 - 15 = 17$

" no. of ip " usable = $2^{17} - 2$

b) Subnet Mask = 20 bits (N20 Bits)

i) $11111111.11111111.11110000.00000000$
 $= 255.255.240.0$ (DD representation)

(ii) 24.130.0.0/15 N20 bits
 submask is

$11111111.11111110.00000000.00000000$
 $= 255.254.0.0$

c) First ip address and last ip address for

i) 128.2.32.0/20

$10000000.00000010.00100000.00000000$
 $\underbrace{\hspace{10em}}_{20 \text{ bits}} \quad \underbrace{\hspace{10em}}_{12 \text{ bits}}$

First ip address possible =

10000000.00000010.00100000.00000000

(i) 128.2.32.0

No. of hosts = $2^{12} - 2$

First usable ip address = 128.2.32.1
(host)

Last ip address possible = ~~128.2.~~

⇒ 10000000.00000010.0010 | 1111.11111111
20

⇒ 128.2.47.255

Last usable ip address

⇒ 128.2.47.254

(ii) 24.130.0.0/15

00011000.10000010.00000000.00000000
15 digits bits 17 digits bits

No. of hosts = $2^{17} - 2$

First ip address possible = 24.130.0.0

Last ip address possible = 00011000.10000011.11111111.11111111
= 24.131.255.255

Usable = -1

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