

①

a) 12.0.0.0 / 27

12.0000000.0000000.0000000

2) Subnet Mask

255.0.0.0

1111111.0000000.0000000.

3) Find $n = ?$

$$n = 27 - 8$$

$$n = 19$$

$2^9 =$ Total networks.

4) Find updated network subnet mask.

2^5

1111111.1111111.11100000.0000000

255. 255. 224. 0

5) Perform AND operation of IP and U.S.M

12.0000000.0000000.0000000

111111.111111.11100000.0000000

12. 0. 0. 0

c)

N.ID (2.0.0.0) - (2.0.0.31) B.ID
(1-30)

N.ID (12.0.0.32) - (12.0.0.64) B.ID
(33-63)

N.ID (12.0.0.65) - (12.0.0.96) B.ID
(66-95)

N.ID (12.0.0.97) - (12.0.0.128) B.ID
(98-127)

2

i) IP

12.0.0.0/15

12.00000000.00000000.00000000

ii) S.M

255.0.0.0

1111111.0000000.0000000.00000000

iii) Find $n = ?$

$$n = 7$$

$2^7 = 128$ (subnets)

iv) Update S.M.

1111111.1111110.0000000.00000000

255.254.0.0

v) Perform AND operation on IP and Update S.M.

12.0000000.0000000.0000000

1111111.1111110.0000000.0000000

12.0.0.0

~~N.T. (12.2.255)~~

N.ID(12.0.0.0) - (12.1.255.255) B.ID

(12.0.0.1 - 12.1.255.254) N.I = 12.0.0.1 B.ID + 1.255

N.ID(12.2.0.0) - (12.3.255.255) B.ID

(12.2.0.1 - 12.3.255.254)

N.ID(12.4.0.0) - (12.5.255.255) B.ID

(12.4.0.1 - 12.5.255.254)

N.ID(12.254.0.0) - (12.255.255.255) B.ID

(12.255.255.255 - 12.255.255.254)

(3)

1) 140.10.10.0/17

140.10.00001010.00000000

2) S.M

255.255.0.0

1111111.1111111.0000000.0000000

3) Find $n = ?$

$n = 1$

2^1

2 subnets

4) Find update S.M

1111111.1111111.1000000.0000000

255.255.128.0

5) Perform AND operation between IP and Update S.M.

140.10.00001010.0000000

255.255.10000000.00000000

140.10.0.0

6) N.IP(140.10.0.0) → EIP (140.10.127.255) B.IP
(140.10.0.1 - 140.10.127.254)

N.IP(140.10.128.0) → (140.10.255.255) B.IP
(140.10.128.1 - 140.10.255.254)