CS & IT ENGINEERING

Computer Network

Subnetting part- 1

DPP 04 Discussion Notes

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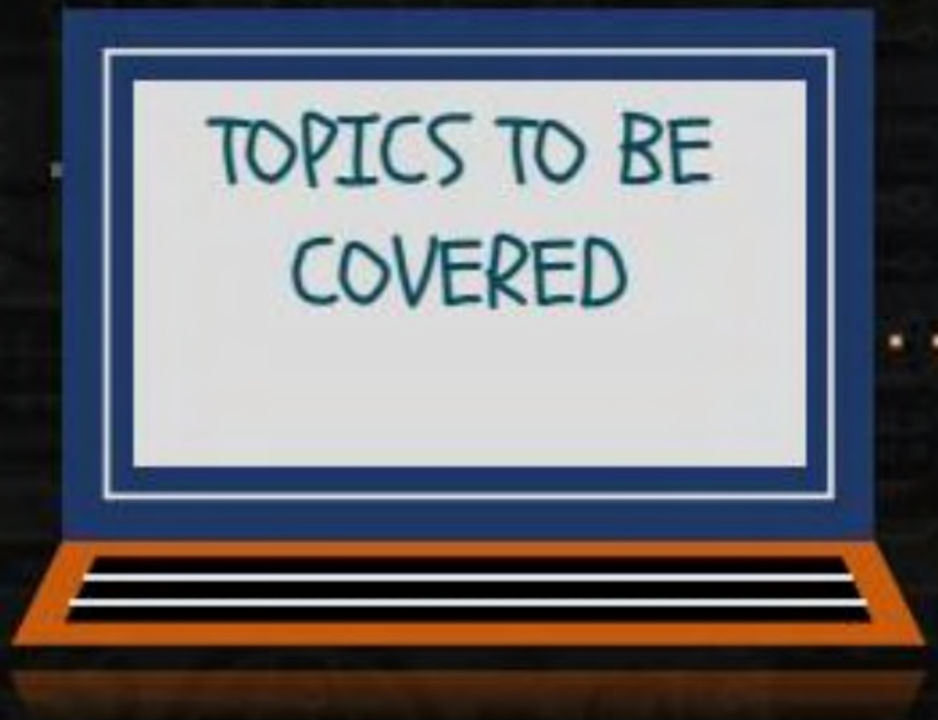

01 Question

02 Discussion

Q.1 Suppose, a class B network with subnet mask 255.255.224.0 the number of hosts per subnet is ___. 8190 **[NAT]**

SM: 255.255.224.0

11111111.11111111.11100000.00000000

No. of 1's = 19

No. of 0's = 13

No. of 1's in the S.M = NID+SID

NID+SID = 19

16+SID = 19

SID = 3 bit

No. of subnet = 2^3 = 8

HID = 13 bit → No. of Host/subnet = $2^{13} - 2$ = 8190

No. of 0's in the SM = HID

HID = 13 bit

No. of Host/subnet = $2^{13} - 2$

= 8192 − 2 = 8190

Q.2 An organization has class B network and wishes to form subnet for 65 departments. The subnet mask would be? [MCQ]

A. 255.255.0.0

B. 255.255.254.0 ✓

C. 255.255.194.0

D. 255.255.252.0

Class-B

NID	HID
16	16

65 Subnet

NID	SID	HID
16	7	9

No. of 1's in the S.M = NID + SID
= 16 + 7 = 23

No. of 0's in the S.M = HID = 9

11111111.11111111.11111110.00000000 → 255.255.254.0

Q.3

In a class B network on the internet has a subnet mask 255.255.252.0. What is the minimum number of hosts per subnet is/are possible. So, that subnet mask fails? [NAT] 1023

SM: 255.255.252.0

11111111.11111111.111111**00**.**00000000**

HID = 10 bit

Max. No. of Host/subnet = $2^{10} - 2$

= 1022

Q.4 Suppose, network ID of entire network is 176.178.0.0 and subnet mask is 255.255.255.0. If X is the number of bits borrowed from HID and Y is the total number of subnets in network then the value of Y/X is ___. [NAT]

$\frac{256}{8} = 32$

NID = 176.178.0.0 → class B (128-191)

SM: 11111111.11111111.11111111.00000000

No. of 1's = 24, No. of 0's = 8

Class-B

NID	HID
16	16

8	8
SID	HID

No. of 1's in the SM = NID + SID

NID + SID = 24

16 + SID = 24

SID = 8 bit (X)

No. of subnet = $2^8 = 256$ (Y)

No. of 0's in the SM = HID

HID = 8 bit

Q.5

Suppose a network ID of network is 160.160.0.0 and subnet mask is 255.255.254.0. The total bits are borrowed **[NAT]** from HID part is/are 7.

class-B

NID	HID
16	16

NID = 160.160.0.0 (class-B)

SM: 255.255.254.0

16	7	9
NID	SID	HID

11111111.11111111.1111111 0.00000000

NID SID HID

No of 1's = 23, No of 0's = 9

No. of 1's in the SM = NID+SID

NID+SID = 23

16+SID = 23

SID = 7 bit

HID = 9 bit

Q.6

If a class B network on the internet has subnet mask of 255.255.252.0. What is the maximum number of hosts/subnets? (Assume classful addressing scheme is followed)?

[MCQ]

A. 1022

B. 2046

C. 1023

D. 2047

SM: 255.255.252.0

11111111.11111111.111111|00.00000000

HID = 10 bit

Max. No. of Host|subnet $= 2^{10} - 2$

$= 1022$

Q.7

Consider a class C network 15 subnets and 25 hosts per subnet. An appropriate subnet mask for this network would be?

[MCQ]

A. 255.255.240.0

B. 255.255.255.254

C. 255.255.255.240

D. None of these

class-c

NID	HID
24	8

15 subnet

24	4	4
NID	SID	HID

No. of Host/subnet $= 2^4 - 2 = 14$

No. of subnet $= 2^4 = 16$


THANK YOU GW
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