Practical Assignment 10

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Date :

1. Find default subnet masks, network bits, host bits, host per subnet, no of subnets subnet number, 1st valid IP address, last valid IP address and broadcast address

i) 8.1.4.5 /16

- class A
- Subnet mask : ~~255.0.0.0~~ 255.255.0.0.
- Network bits: 16 Host bits: 16
- Host per subnet : $2^{16} - 2 = 65534$
- No. of subnets within the classful : $2^{16-8} = 256$
- Subnet number : 8.1.0.0
- First usable : 8.1.0.1
- Last usable : 8.1.255.254
- Broadcast address : 8.1.255.255

ii) 130.4.102.1 /24

class B

Subnet mask : 255.255.255.0

Network bits : 24 Host bits : 8

Host per subnet : $2^8 - 2 = 254$

No. of subnet within the classful : $2^{24-16} = 256$

subnet Number : 130.4.102.0

First usable : 130.4.102.1

Last usable : 130.4.102.254

Broadcast address : 130.4.102.255

iii) 130.4.102.1/22
- Class B
- Subnet mask : 255.255.252.0
- Network bit : 22 Host bits : 10
- Host per subnet : $2^{10} - 2 = 1022$
- No. of subnet within the classful : $2^{22-16} = 64$
- Subnet number : 130.4.100.0
- First usable : 130.4.100.1
- Last usable : 130.4.103.254
- Broadcast : 130.4.103.255

iv) 199.1.1.100/27
- Class C
- Subnet mask : 255.255.255.224
- Network bit : 27 Host bit : 5
- Host per subnet : $2^5 - 2 = 30$
- No. of subnet within the classful : $2^{27-24} = 8$
- Subnet number : 199.1.1.96
- First usable : 199.1.1.97
- Last usable : 199.1.1.126
- Broadcast : 199.1.1.127

2. A host in a class C network has been assigned an IP 192.168.17.9. Find the number of addresses in the block, the first address, and the last address

- Block : 24 = 255.255.255.0
- Number of addresses in the block: $2^{32-24} = 256$
- First address: 192.168.17.0
- First usable address: 192.168.17.1
- Last address: 192.168.17.255
- Last usable address: 192.168.17.254

3. An address in a block is given as 185.28.17.9. Find the number of addresses in the block, the first address and the last address

- Block : 16 = 255.255.0.0
- No. of addresses in the block : $2^{32-16} = 65536$
- First address: 185.28.0.0
- First usable address: 185.28.0.1
- Last address: 185.28.255.255
- Last usable address: 185.28.255.254

4. A block of addresses is granted to small Organization we know that one of the addresses is ~~205.~~ 205.16.37.39/28. what is the first address, ~~number~~ last address, number of address in

- subnet mask: 255.255.255.240
- Block size: $2^{32-28} = 16$
- Fourth-octet block: 16 => covers 32-47
- First address: 205.16.37.32
- First usable: 205.16.37.33
- Last address: 205.16.37.47
- Last usable: 205.16.37.46
- Number of address in the block: 16

5 Subnet the IP address 216.21.5.0 into 30 hosts in each subnet. Find class, Default Mask, subnet mask, Bit Borrowed, New subnet mask, No. of Host & subnet Network Ranges (Subnets).

- Class C
- default subnet mask: 255.255.255.0
- Bit borrowed: 3
- New subnet mask: 255.255.255.224
- No. of subnets: $2^3 = 8$
- Host per subnet: $2^5 - 2 = 30$

- Network range
1) 216.21.5.0 - 216.21.5.30
2) 216.21.5.32 - 216.21.5.63
3) 216.21.5.64 - 216.21.5.95
4) 216.21.5.96 - 216.21.5.127
5) 216.21.5.128 - 216.21.5.159
6) 216.21.5.160 - 216.21.5.191
7) 216.21.5.192 - 216.21.5.223
8) 216.21.5.224 - 216.21.5.255

6. Subnet the IP address 192.10.20.0. into 52 hosts in each subnet. Find class, Default Mask, Bit Borrowed, New subnet mask, No. of Hosts & Subnet, Network Ranges (Subnets)

- Class C
- Host Bit Borrowed = 2
- Network Subnet mask: 255.255.255.192
- No. of subnet : $2^2 = 4$
- Host per subnet : 62

- Network ranges
1) 192.10.20.0 - 192.10.20.63
2) 192.10.20.64 - 192.10.20.127
3) 192.10.20.128 - 192.10.20.191
4) 192.10.20.192 - 192.10.20.255

7) Determining the subnet mask for Device A and B:

a) Device A : 172.16.17.30/20

- Third-Octet block size : 16
- Network : 172.16.16.0
- Usable : 172.16.16.1 - 172.16.31.254
- Broadcast : 172.16.31.255

b) Device B : 172.16.~~17~~ 28. ~~36~~ 15/20.

- Same block 16-31
- Network : 172.16.16.0
- Usable : 172.16.16.1 - 172.16.31.254
- Broadcast : 172.16.31.255.