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DW1E

IP AND SUBNETTING EXERCISES

1. Write the subnet, broadcast address and valid host range for the following:

a. 192.168.100.17, with 4 bits of subnetting:

11111111.11111111.11111111.11110000

255.255.255.240 Magic number=16

Subnet is 192.168.100.16 or /28, broadcast is 192.168.100.31 and the valid host range is 192.168.100.17 to 30

b.192.168.100.66, with 3 bits of subnetting:

11111111.11111111.11111111.11100000

255.255.255.224 Magic number=32

Subnet is 192.168.100.64, broadcast is 192.168.100.95 and the valid host range is 192.168.100.65 to 94

c.172.16.10.5/20

11111111.11111111.11110000.00000000

172.16.00000000.00000000. The network address will be 172.16.0.0

172.16.00001111.11111111. The broadcast address will be 172.16.15.255

Host range 172.16.0.1 to 172.16.15.254 (212 - 2 = 4094 hosts).

d.172.16.10.33/255.255.252.0

11111111.11111111.11111100.00000000

172.16.00001000.00000000. The network address will be 172.16.8.0

172.16.00001011.11111111. The broadcast address will be 172.16.11.255

Host range 72.16.8.1 to 171.16.11.254

2 You have been asked to create a subnet that supports 126 hosts. What subnet is the most efficient one?

We need $2^7 - 2 =$ 126 It means 7 bits for the hosts in the mask
11111111.11111111.11111111.10000000

The most efficient mast would be 255.255.255.128 or /25

3.Given the following information:

Network address: 192.168.10.0

Subnet mask: 255.255.255.192

How many subnets are there? How many hosts? What are the valid subnets?

Last octet= 11000000

We have a total of 4 subnets (22) and 62 hosts (26 – 2) for each subnetwork.

Valid Subnets: 192.168.0.0/26 - broadcast is 192.168.10.63

192.168.0.64/26 - broadcast is 192.168.10.127 and the valid hosts range from 192.168.10.65 to 192.168.10.126

192.168.10.128/26 - broadcast is 192.168.10.191 and valid host range from 192.168.10.129 to 192.168.10.190

192.168.10.192/26 - broadcast is 192.168.10.255 and valid host range from 192.168.10.193 to 192.168.10.254

5. XYZ Company would like to subnet its network so that there are five separate subnets. They will need 25 computers in each subnet. Complete the following table: NOTE: If you create more than five subnets, list the extra ones too.

Subnet	Network address	Host addresses	Boradcast address
Subnet mask: 255.255.255.224			
First subnet	192.168.162.0	192.168.162.1 - 192.168.162.30	192.168.162.31
Second subnet	192.168.162.32	192.168.162.33 - 192.168.162.62	192.168.162.63
Third subnet	192.168.162.64	192.168.162.65 - 192.168.162.94	192.168.162.95
Fourth subnet	192.168.162.96	192.168.162.97 - 192.168.162.126	192.168.162.127
Fifth subnet	192.168.162.128	192.168.162.129 - 192.168.162.158	192.168.162.159
Sixth subnet	192.168.162.160	192.168.162.161 - 192.168.162.190	192.168.162.191
Seventh subnet	192.168.162.192	192.168.162.193 - 192.168.162.222	192.168.162.223
Eighth subnet	192.168.162.224	192.168.162.225 - 192.168.162.254	192.168.162.255