Scenario: You are assigned the 192.168.10.0 255.255.255.0, we need to subnet to create 4 networks that can have 50 hosts per network. One for each of the 4 departments.

1st step: Covert to Binary

192.168.10.0 = 11000000.10101000.00001010.00000000

255.255.255.0= 11111111.11111111.11111111.11000000

2nd step: Determine how many hostID bits to become networkID bits.

192.168.10.0 = 11000000.10101000.00001010.00000000

255.255.255.192= 11111111.11111111.11111111.11000000

3rd step: change subnet mask to associate new bits. This will be new subnet mask for each network.

4th step: find every possible binary combination to become new NetworkIDs.

192.168.10.0= 11000000.10101000.00001010.00000000

255.255.255.192= 11111111.11111111.11111111.11000000

192.168.10.64= 11000000.10101000.00001010.01000000

255.255.255.192= 11111111.11111111.11111111.11000000

192.168.10.128= 11000000.10101000.00001010.10000000

255.255.255.192= 11111111.11111111.11111111.11000000

192.168.10.192= 11000000.10101000.00001010.11000000

255.255.255.192= 11111111.11111111.11111111.11000000

5th step: Determine networkID, 1st and last valid network address and broadcastID.

Hint: remember how you determine the networkID from host bits. Remember how you determine the broadcastID.

Administration

192.168.10.0= 11000000.10101000.00001010.00111111

255.255.255.192= 11111111.11111111.11111111.11000000

1st address: 192.168.10.1 -least sig host bit is a 1

Last address: 192.168.10.62 – all bits but last are 1

BroadcastID: 192.168.10.63 – all bits are 1

Marketing

192.168.10.64= 11000000.10101000.00001010.01111111

255.255.255.192= 11111111.11111111.11111111.11000000

1st address: 192.168.10.65

Last address: 192.168.10.126

BroadcastID: 192.168.10.127

Production

192.168.10.128= 11000000.10101000.00001010.10111111

255.255.255.192= 11111111.11111111.11111111.11000000

1st address: 192.168.10.129

Last address: 192.168.10.190

BroadcastID: 192.168.10.191

Edutainers

192.168.10.192= 11000000.10101000.00001010.11000000

255.255.255.192= 11111111.11111111.11111111.11000000

1st address: 192.168.10.193

Last address: 192.168.10.254

BroadcastID: 192.168.10.255