2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0

128 64 32 16 8 4 2 1

0 - represent as a host

1 - represent as a network

145.10.34.3 --------------IP Address

10010001.00001010.00100010.00000011

192.169.96.16 ----------- IP Address

11000000.10101001.01100000.00010000

subnetting ----------------------

CIDR - class-less Inter Domain Routing - Always represent network bits

Subnetting of class C -

Default subnet of class c = 255.255.255.0

192.168.10.0/25 Default CIDR Value of class C - 24

255.255.255.0

11111111.11111111.11111111.10000000

255.255.255.128 ----------------------new subnet mask

Block size = 256 - New subnet mask = 256-128 = 128

Number of subnets = 256/block size = 256/128 = 2

Number of hosts = (2^n - 2) = 2^7 - 2 = 126 --Valid IP's n represents as a O

Subnet 1

========================================================

192.168.10.0 ----------------------------------Network ID

192.168.10.1 ----------------------------------- First Valid IP

192.168.10.126 ---------------------------------Last Valid IP

192.168.10.127 ------------------------------Broadcast ID

subnet 2

=======================================================

192.168.10.128 -------------------------------Network ID

192.168.10.129 ------------------------------ First Valid IP

192.168.10.254 ----------------------------= Last Valid IP

192.168.10.255 ------------------------------ Broadcast ID

192.168.10.0/26

255.255.255.0

11111111.11111111.11111111.11000000

255.255.255.192 --------------------- new subnet Mask

block size = 256-192 = 64

number of subnets = 256/64 = 4

number of host = 2^n - 2 = 2^6 - 2 = 62

subnet 1

=====================================================

192.168.10.0 ----------------------------network ID

192.168.10.1 ---------------------------- First valid IP

192.168.10.62 ---------------------------- Last Valid IP

192.168.10.63 ---------------------------- Broadcast ID

subnet 2

===============================================

192.168.10.64 ---------------------------- Network ID

192.168.10.65 --------------------------- First valid IP

192.168.10.126 ------------------------- Last Valid IP Last Valid IP = Block size + Previous subnet last valid IP = 64+62 = 126

192.168.10.127 ------------------------- Broadcast ID

subnet 3

===============================================

192.168.10.128 -------------------------Network ID

192.168.10.129 ------------------------ First Valid IP

192.168.10.190-------------------------- Last Valid IP

192.168.10.191 ------------------------- broadcast ID

subnet 4

=============================================

192.168.10.192 -----------------------network ID

192.168.10.193 ----------------------- First Valid IP

192.168.10.254 ----------------------- Last Valid IP

192.168.10.255 ---------------------- Broadcast ID

192.168.10.0/27

255.255.255.0

11111111.11111111.11111111.11100000

255.255.255.224

Block size = 256-224 = 32

Number of subnets = 256/32 = 8

Number of hosts = 2^5 - 2 = 30

192.168.10.0/28

255.255.255.0

11111111.11111111.11111111.11110000

255.255.255.240

Block size = 256-240 = 16

number of subnets = 256/16 = 16

number of hosts = 2^4 - 2 = 14

192.168.10.0/29

255.255.255.0

11111111.11111111.11111111.11111000

255.255.255.248

Block size = 256-248 = 8

number of subnets = 256/8 =32

number of hosts = 2^3 - 2 = 6

192.168.10.0/30

255.255.255.0

11111111.11111111.11111111.11111100

255.255.255.252

block size = 256-252 = 4

number of subnets = 256/4 = 64

number of hosts = 2^2 - 2 = 2

Subnetting of class B

Default Subnet of Class B = 255.255.0.0

Default CIDR value of class B = 16

172.16.0.0/17

255.255.0.0

11111111.11111111.10000000.00000000

255.255.128.0 --------------------New subnet Mask

block size = 256-128 = 128

number of subnet = 256/128 = 2

Number of hosts = 2^15 - 2 = 32766

subnet 1

==================================================

172.16.0.0 ---------------------Network ID

172.16.0.1 --------------------- First valid IP

172.16.127.254 ------------------ Last Valid IP

172.16.127.255 ----------------- Broadcast ID

subnet 2

===========================

172.16.128.0 -----------------------Network ID

172.16.128.1 --------------------- First valid IP

172.16.255.254 --------------------- Last Valid IP

172.16.255.255 ------------------- Broad cast ID

172.16.0.0/18

255.255.0.0

11111111.11111111.11000000.00000000

255.255.192.0

BS= 256-192 = 64

Number of subnets = 256/64 = 4

Number of hosts = 2^14 - 2 = 16382

172.16.0.0/20

255.255.0.0

11111111.11111111.11110000.00000000

255.255.240.0

BS = 256-240=16

Number of subnets = 256/16 = 16

Number of hosts = 2^12 - 2 = 4094

172.16.0.0/24

255.255.0.0

11111111.11111111.11111111.00000000

255.255.255.0

BS= 256-255=1

Number of subnet = 256/1= 256

Number of hosts = 2^8-2 = 254