**IP Address**

25.0.0.0/8 [network ip]

25.0.0.1

25.0.0.2

……..

25.0.0.255

25.0.1.0

25.0.1.1

25.0.1.2

………

25.0.1.255

25.0.2.0

……….

25.0.255.0

……..

25.0.255.255

25.1.0.0

25.1.0.1

25.1.0.2

………

25.1.255.255

25.2.0.0

……..

25.255.0.0

…………..

25.255.255.254

25.255.255.255 [broadcast ip]

25.0.0.1- 25.255.255.254 [useable ip]

**Subnetting**

196.40.15.0/24

196.40.15.0/26 [network ip]

196.40.15.00000000

PC-55

196.40.15.00000000=0

1-62

196.40.15.00111111 = 63 [broadcast ip]

210.55.0.0/27

210.55.0.00000000

210.55.0.00011111=31

0-31, 32-63, 64-95, 96-127, 128-159, 160-191, 192-223, 224-255

256-32=224 224-32=192

Class B

160.30.0.0/25 [network ip]

160.30.00000000.00000000= 160.30.0.0

160.30.00000000.01111111=160.30.0.127 [broadcast ip]

0.0- 0.127 ,

0.128-0.255,

1.0-1.127,

1.128-1.255

255.0 – 255.127

255.128 – 255.255

[256-128=128] [128-128=0]

145.15.0.0/28 [network ip]

145.15.0.15

28-16=12 2^12=4096

0.16-0.31 [2nd]

145.15.255.224 – 145.15.255.239 [4095th]

145.15.255.240- 145.15.255.255 [4096th]

256-16=240

180.50.0.0/22 [network ip]

180.50.00000000.00000000

180.50.00000011.11111111= 180.50.3.255 [broadcast ip]

180.50.00000100.00000000=180.50.4.0 [network ip]

180.50.00000111.11111111= 180.50.7.255 [broadcast ip]

0.0- 3.255, 4.0-7.255, 8.0-11.255

180.50.248.0- 180.50.251.255

180.50.252.0- 180.50.255.255

175.20.0.0/20 [network ip]

175.20.00000000.00000000

175.20.15.255 [broadcast ip]

175.20.16.0

175.20.31.255

175.20.224.0

175.20.239.255

175.20.240.0

175.20.255.255

40.0.0.0/27 [network ip]

40.00000000.00000000.00000000

2^19

40.0.0.31

40.0.0.32- 40.0.0.63

40.255.255.192 – 40.255.255.223

40.255.255.224 – 40.255.255.255

256-32= 224 224-32=192

70.0.0.0/21 [network ip]

70.00000000.00000000.00000000

70.0.7.255

70.0.8.0 – 70.0.15.255

2^13

70.255.240.0- 70.255.247.255

70.255.248.0 – 70.255.255.255

256-8=248

90.0.0.0/18 [network ip]

90.0.63.255 [broadcast ip]

90.0.64.0

90.0.127.255

90.255.128.0

90.255.191.255

90.255.192.0

90.255.255.255

47.0.0.0/13 [network ip]

47.00000000.00000000.00000000

47.7.255.255 [broadcast ip]

47.8.0.0

47.15.255.255

47.240.0.0 – 47.247.255.255

47.248.0.0 – 47.255.255.255

256-8=248,

80.0.0.0/12 [network ip]

80.15.255.255 [broadcast ip]

80.16.0.0

80.31.255.255

80.224.0.0

80.239.255.255

80.240.0.0

80.255.255.255

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2^7 | 2^6 | 2^5 | 2^4 | 2^3 | 2^2 | 2^1 | 2^0 |
| block | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 1st | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 2nd | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 3rd | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 4th | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |

Subnet Mask

192.168.10.0

255.255.255.240

8.8.8.4 /28

1-128

11-192

111-224

1111-240

11111-248

111111-252

1111111-254

11111111-255

255.255.248.0

8.8.5.0= /21

255.255.128.0

8.8.1.0 =/17

255.255.254.0 = 8.8.7.0=/23

255.224.0.0 =8. 3.0.0= /11