IP Subnetting Examples

1) 192.168.1.153 /27

Is this a usable IP address?

Soln:- 192.168.1.153

11000000.10101000.00000001.10011001
11111111.11111111.11111111.11100000 → 255.255.255.224

11000000.10101000.0000001.10000000

① Convert this binary result to decimal that is the first network address.

→ 192.168.1.128 → 1st n/w address
255.255.255.224 → Mask.

② Next step is to find the magic no.

256
224
32 → Magic no.

③ Since the last octet (4th octet) of the mask is neither 0 or 255, so Consider the 4th Octet of the IP address ie., n/w address & go on adding the magic no to the 4th octet of the n/w address.

192.168.1.128

192.168.1.162

192.168.1.196

192.168.1.230

× (192.168.1.264)

Now the ranges for Each IP addresses are,

192.168.1.128 – 192.168.1.161 [192.168.1.129 – 192.168.1.160]

192.168.1.162 – 192.168.1.195 [192.168.1.163 – 192.168.1.194]

192.168.1.196 – 192.168.1.229 [192.168.1.197 – 192.168.1.228]

192.168.1.230 – 192.168.1.263 [192.168.1.231 – 192.168.1.262]

→ So the given IP address 192.168.1.153 is a usable IP address which comes under the 1st N/w address.

Example ② 172.168.10.0/22

10101100. 10101000. 00001010. 00000000
11111111. 11111111. 11111100. 00000000

10101100. 10101000. 00001000. 00000000

172.168.8.0
255.255.252.0

256
252
4

→ Now keep on adding magic no 4 to the 3rd oct of the IP address.

172.168.8.0 –
172.168.12.0
172.168.16.0
.20.0
⋮
172.168.252.0

→ Now find the ranges for the n/w addresses

→ 172.168.8.0 – 172.168.11.255
[172.168.8.1 – 172.168.11.254]

→ 172.168.12.0 – 172.168.15.255
[172.168.12.1 – 172.168.15.254]

→ 172.168.16.0 – 172.168.19.255
[172.168.16.1 – 172.168.19.254]