

Subject : **Computer Network**

Study Program : Informatics IT-6

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TASK 4

An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows.

- a) The first group has 200 medium-size businesses; each needs 128 addresses.
- b) The second group has 400 small businesses; each needs 16 addresses.
- c) The third group has 2000 households; each needs 4 addresses.

Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.

a.) 128 Adresses, 200 Blocks.

Answer :

$$2^{32-n} = 128$$

$$2^x = 128$$

$$X = 7$$

$$32 - n = 7$$

$$N = 25 //$$

1). 150.80.0.0/25 – 150.80.0.127/25

2). 150.80.0.128/25 – 150.80.0.255/25

200.) 150.80.99.128/25 - 150.80.99.255/25

$$200 \times 128 = 25.600 \text{ adresses}$$

b) 16 adresses, 400 Blocks

Answer :

$$2^{32-n} = 16$$

$$2^x = 16$$

$$X = 4$$

$$32 - n = 4$$

$$N = 28 //$$

1). 150.80.100.0/28 – 150.80.100.15/28

2). 150.80.100.16/28 – 150.80.100.31/28

3). 150.80.100.32/28 – 150.80.100.47/28

4). 150.80.100.48/28 – 150.80.100.63/28

5). 150.80.100.64/28 – 150.80.100.79/28

- 6). 150.80.100.80/28 – 150.80.100.95/28
 - 7). 150.80.100.96/28 – 150.80.100.111/28
 - 8). 150.80.100.112/28 – 150.80.100.127/28
 - 9). 150.80.100.128/28 – 150.80.100.143/28
 - 10). 150.80.100.144/28 – 150.80.100.159/28
 - 11). 150.80.100.160/28 – 150.80.100.175/28
 - 12). 150.80.100.176/28 – 150.80.100.191/28
 - 13). 150.80.100.192/28 – 150.80.100.207/28
 - 14). 150.80.100.208/28 – 150.80.100.223/28
 - 15). 150.80.100.224/28 – 150.80.100.239/28
 - 16). 150.80.100.240/28 – 150.80.100.255/28
 - 400). 150.80.124.240/28 – 150.80.124.255/28
- 400 x 16 = 6400

c). 4, 2000 blocks

$$2^{32-n} = 4$$

$$X = 2$$

$$N = 30$$

- 1). 150.80.125.0/30 – 150.80.125.3/30
- 2). 150.80.125.4/30 – 150.80.125.7/30
- 3). 150.80.125.8/30 – 150.80.125.11/30
- 4). 150.80.125.12/30 – 150.80.125.15/30
- 5). 150.80.125.16/30 – 150.80.125.19/30
- 6). 150.80.125.20/30 – 150.80.125.23/30
- 7). 150.80.125.24/30 – 150.80.125.27/30
- 8). 150.80.125.28/30 – 150.80.125.31/30
- 9). 150.80.125.32/30 – 150.80.125.35/30
- 10). 150.80.125.36/30 – 150.80.125.39/30
- 11). 150.80.125.40/30 – 150.80.125.43/30
- 12). 150.80.125.44/30 – 150.80.125.47/30
- 13). 150.80.125.48/30 – 150.80.125.51/30
- 14). 150.80.125.52/30 – 150.80.125.55/30
- 15). 150.80.125.56/30 – 150.80.125.59/30
- 16). 150.80.125.60/30 – 150.80.125.63/30
- 17). 150.80.125.64/30 – 150.80.125.67/30
- 18). 150.80.125.68/30 – 150.80.125.71/30
- 19). 150.80.125.72/30 – 150.80.125.75/30
- 20). 150.80.125.76/30 – 150.80.125.79/30
- 21). 150.80.125.80/30 – 150.80.125.83/30
- 22). 150.80.125.84/30 – 150.80.125.87/30
- 23). 150.80.125.88/30 – 150.80.125.91/30
- 24). 150.80.125.92/30 – 150.80.125.95/30
- 25). 150.80.125.96/30 – 150.80.125.99/30
- 26). 150.80.125.100/30 – 150.80.125.103/30
- 27). 150.80.125.104/30 – 150.80.125.107/30

28). 150.80.125.108/30 – 150.80.125.111/30
29). 150.80.125.112/30 – 150.80.125.115/30
30). 150.80.125.116/30 – 150.80.125.119/30
31). 150.80.125.120/30 – 150.80.125.123/30
32). 150.80.125.124/30 – 150.80.125.127/30
33). 150.80.125.128/30 – 150.80.125.131/30
34). 150.80.125.132/30 – 150.80.125.135/30
35). 150.80.125.136/30 – 150.80.125.139/30
36). 150.80.125.140/30 – 150.80.125.143/30
37). 150.80.125.144/30 – 150.80.125.147/30
38). 150.80.125.148/30 – 150.80.125.151/30
39). 150.80.125.152/30 – 150.80.125.155/30
40). 150.80.125.156/30 – 150.80.125.159/30
41). 150.80.125.160/30 – 150.80.125.163/30
42). 150.80.125.164/30 – 150.80.125.167/30
43). 150.80.125.168/30 – 150.80.125.171/30
44). 150.80.125.172/30 – 150.80.125.175/30
45). 150.80.125.176/30 – 150.80.125.179/30
46). 150.80.125.180/30 – 150.80.125.183/30
47). 150.80.125.184/30 – 150.80.125.187/30
48). 150.80.125.188/30 – 150.80.125.191/30
49). 150.80.125.192/30 – 150.80.125.195/30
50). 150.80.125.196/30 – 150.80.125.199/30
51). 150.80.125.200/30 – 150.80.125.203/30
52). 150.80.125.204/30 – 150.80.125.207/30
53). 150.80.125.208/30 – 150.80.125.211/30
54). 150.80.125.212/30 – 150.80.125.215/30
55). 150.80.125.216/30 – 150.80.125.219/30
56). 150.80.125.220/30 – 150.80.125.223/30
57). 150.80.125.224/30 – 150.80.125.227/30
58). 150.80.125.228/30 – 150.80.125.231/30
59). 150.80.125.232/30 – 150.80.125.235/30
60). 150.80.125.236/30 – 150.80.125.239/30
61). 150.80.125.240/30 – 150.80.125.243/30
62). 150.80.125.244/30 – 150.80.125.247/30
63). 150.80.125.248/30 – 150.80.125.251/30
64). 150.80.125.252/30 – 150.80.125.255/30
2000). 150.80.156.60/30 – 150.80.156.63/30

2000 x 4 = 8000 adress

Total adress = 8000 + 25600 + 6400
= 40.000