192.168.1.0

255.255.255.0

Department 1 60 , Department 2 20 , Departmetn 3 30 , Department 4 120

Department 4 has 120 hosts

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|  | 128 | 192 | 224 | 240 | 248 | 252 | 254 | 255 |
| a/8 | /9 | /10 | /11 | /12 | /13 | /14 | /15 | /16 |
| b/16 | /17 | /18 | /19 | /20 | /21 | /22 | /23 | /24 |
| c/24 | /25 | /26 | /27 | /28 | /29 | /30 | /31 | /32 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

DEP4/25

11111111.11111111.11111111.100000000

Subnet mask 255.255.255.128

2^1=2

2^7 = 128 hosts

Department 1 60 hosts

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|  | 128 | 192 | 224 | 240 | 248 | 252 | 254 | 255 |
| a/8 | /9 | /10 | /11 | /12 | /13 | /14 | /15 | /16 |
| b/16 | /17 | /18 | /19 | /20 | /21 | /22 | /23 | /24 |
| c/24 | /25 | /26 | /27 | /28 | /29 | /30 | /31 | /32 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

11111111.11111111.11111111.11000000

2^2= 4

2^6 = 64

Subnet mask

128+64=192/26

255.255.255.192

Department 2 20 hosts

255.255.255.0

11111111.11111111.11111111.11100000

Borrowing 3 bits

128+64+32 = 224/27

Department 3 30 hsots

255.255.255.0

11111111.11111111.11111111.11100000

Borrowing 3 bits

128+64+32=224

255.255.255.224/27

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Network id | First valid ip address | Last valid ip address | Broadcast id |
| Department 4 | 192.168.1.0 | 192.168.1.1 | 192.168.1.126 | 192.168.1.127 |
| Department 1 | 192.168.1.128 | 192.168.1.129 | 192.168.1.190 | 192.168.1.191 |
| Department 2, 3 | 192.168.1.192 | 192.168.1.254 | 192.168.1.254 | 192.168.1.255 |
|  |  |  |  |  |