CNOS (PROJECT)- CTR Continental Iasi

Step I- Analysis of the organization's requirements

- How many physical subnets are needed today?

  -8 subnets

- How many physical subnets are expected to be needed in the near future?

  -10 subnets

- How many hosts must have the largest subnet today?

  -30 hosts

- How many hosts must have the largest subnet in the near future?

  -50 hosts

- To which address classes does the IP address belong?

  -class C

Step II - - Partition of bits in the host ID

- Class C network: 192.168.80.0
- 8 subnets with 30host/subnet
- No. of subnet bits: $2^S >= 8 \rightarrow S=3$ ($2^3 = 8$)
- No. of host bits: $2^H - 2 >= 25 \rightarrow H=5$ ($2^5 - 2 = 30$)

Step III - Determining the custom subnet mask

Class C network:192.168.80.0

3 bits for the subnet ID

Subnet mask (in binary): 11111111 . 11111111 . 11111111 . 111 00000

Subnet mask(in decimal): 255 .255.255.224

In CIDR notation: /27

Step IV - Determining the subnet identifier and IP address of the subnets

Class C network: 192.168.80.0

3 bits for the subnet ID:

CIDR: /27

8 subnets: #0 - #7

The IP address(in binary): 11000000.10101000.01010000.00000000

SUBNET	Subnet ID (binary)	IP address of the subnet
#0	000	11000000.10101000.01010000.00000000 192.168.80.0
#1	001	11000000.10101000.01010000.00100000 192.168.80.32
#2	010	11000000.10101000.01010000.01000000 192.168.80.64
#3	011	11000000.10101000.01010000.01100000 192.168.80.96
#4	100	11000000.10101000.01010000.10000000 192.168.80.128
#5	101	11000000.10101000.01010000.10100000 192.168.80.160
#6	110	11000000.10101000.01010000.11000000 192.168.80.192
#7	111	11000000.10101000.01010000.11100000 192.168.80.224

Step V - Allocating the host addresses for each subnet

The IP address: 198.168.80.0 /27

5 bits for host ID

SUBNET	IP address of the subnet	Host Address Range	Broadcast address
#0	192.168.80.0	192.168.80.1-192.168.80.30	192.168.80.31
#1	192.168.80.32	192.168.80.33-192.168.80.62	192.168.80.63
#2	192.168.80.64	192.168.80.65-192.168.80.94	192.168.80.95
#3	192.168.80.96	192.168.80.97 - 192.168.80.126	192.168.80.127
#4	192.168.80.128	192.168.80.129 - 192.168.80.158	192.168.80.159
#5	192.168.80.160	192.168.80.161 - 192.168.114.190	192.168.80.191
#6	192.168.80.192	192.168.80.193 - 192.168.114.222	192.168.80.223
#7	192.168.80.224	192.168.80.225 - 192.168.80.254	192.168.80.255