

# Subnetting

Soumis par CCNA

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- Subnetting : process of splitting one big network into multiple smaller networks by borrowing bits from the host part to the network part

--> more networks, less hosts per network

--> optimization of IP addressing

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Subnetting procedure through the example : 192.168.10.0/26

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Step 1 : Identify the IP class

192.168.10.0/26 (classless) --> 192.168.10.0/24 (C- class)

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Step 2 : Expand the host part

27  
26  
25  
24  
23  
22  
21  
20

1  
1  
0  
0  
0  
0  
0  
0

-->  $2^7 + 2^6 = 128 + 64 = 192$

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Step 3 : Determine the number of subnets

$M = \text{nb of bits reserved to the network} \rightarrow 2^{M-2} = 2^{22-2} = 2$  subnets available

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Step 4 : Determine the number of hosts per subnet

$N = \text{nb of bits reserved to hosts} \rightarrow 2^{N-2} = 2^{26-2} = 64-2 = 62$  hosts per subnet

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Step 5 : Calculate the block size

Block size =  $256 - \text{nb of bits reserved to the network} \rightarrow \text{Block size} = 256 - 192 = 64$

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Step 6 : Determine the subnet mask

Subnet mask  $\rightarrow$  networkpart = all bits at 1 / host part = all bits at 0  $\rightarrow$  Subnet mask = 255.255.255.192

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Step 7 : List the subnets and their characteristics

1st subnet = use the block size

2nd subnet = use the block size x 2

( ... )

Last subnet = Subnet mask - Block size

N°

NetID

IP range

Broadcast

1  
192.168.10.64  
65-->126  
192.168.10.127

2  
192.168.10.128  
129-->190

192.168.10.191