Subnetting

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26-05-2008
Dernière mise à jour : 02-06-2008

- 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

--> 27+26 = 128+64 = 192

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Step 3 : Determine the number of subnets

M = nb of bits reserved to the network --> 2M-2 = 22-2 = 2 subnets available

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Step 4 : Determine the number of hosts per subnet

N = nb of bits reserved to hosts --> 2N-2 = 26-2 = 64-2 = 62 hosts per subnet

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Step 5 : Calculate the block size

Block size = 256-nb of bits reserved to the network --> Block size = 256-192 = 64

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Step 6 : Determine the subnet mask

Subnet mask --> networkpart = all bits at 1 / host part = all bits at 0 --> 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