

Re: TCP/IP question,PLEASE!

Source:

<http://www.tech-archive.net/Archive/WinXP/microsoft.public.windowsxp.general/2004-06/19952.html>

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[I hit the wrong button in previous post]

>> *I wonder if someone could explain to me in simple English what subnet mask is and how to apply it to IP address.*

Alon:

IMO, there is not a simple/easy way to explain/learn TCP/IP issues. It requires some study (sometimes a lot).
Following are some thoughts on subnetting.

Primarily, the subnet mask is used to determine what the network address of a subnet is.

For hosts to be in the same subnet, they must have the same network address. If they are not in the same subnet, a router must be used to have communication between the subnets.

A host address's components:

Network ID

Subnet ID

Host ID

Network address's components:

Network ID

Subnet ID

+ binary 0s for padding if necessary

Applying a subnet mask to a host address:

1) Convert each octet of the subnet mask into binary values:

Positions of the binary 1s in subnet mask correspond to positions of the binary expression of the host address that are used for network ID & subnet ID.

Positions of the binary 0s in subnet mask correspond to positions of the binary expression of the host address that are used for host ID.

2) Ascertain Class code of host address:

Restricts certain octets to network ID only:

Class A: first octet is for network ID

Class B: first two octets are for network ID.

Class C: first three octets are for network ID

Remaining octets can be split between:

subnet ID (per 1s in subnet mask)

& host ID (per 0s in subnet mask)

Class codes and related address ranges:

Class A: 1–127.255.255.255

Class B: 128–191.255.255.255

Class C: 192–223.255.255.255

3) Per each octet of the subnet mask: (decimal viewpoint)

For a mask octet of 255: same host address octet is for network address exclusively.

Can be network ID or subnet ID.

For a mask octet of 0: same host address octet is for host ID exclusively

For octets between 0 and 255: use a subnet calculator

(means octet is split between subnet ID and host ID)

For a subnet calculator: I use Net3Group's IP Subnet Calculator

4) Per each octet of the subnet mask: (binary viewpoint)

binary 1s: mask is for network address only (network ID + Subnet ID)

Use Class code to find demarcation point between them

binary 0s: mask is for host ID only

Another view of a subnet mask:

It is a masking system to represent how character positions should be used to decrypt a host address into its components:

network ID (set by Class code)

subnet ID (set by subnet mask binary 1s after network ID)

host ID (set by subnet mask binary 0s)