**The Supernetting / CIDR Chart**

Written by Administrator. Posted in [Supernetting & CIDR](http://www.firewall.cx/networking-topics/protocols/supernetting-a-cidr.html)

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Because subnet masks can get very confusing, the creators of this wonderful network technology also made available a few things to make life somewhat easier.

The following Supernetting - CIDR chart is really a summary of what we've seen so far. It gives you a good idea of the networks we can combine and the result we'd see.

**The Supernetting/CIDR chart**

There are four columns available in our chart:

The CIDR Block, the Supernet Mask, Number of Class C Networks and the Number of Hosts column.

|  |  |  |  |
| --- | --- | --- | --- |
| **Class C** | | | |
| **CIDR Block** | **Supernet Mask** | **Number of Class C Networks** | **Number of Hosts** |
| /14 | 255.252.0.0 | 1024 | 262144 |
| /15 | 255.254.0.0 | 512 | 131072 |
| /16 | 255.255.0.0 | 256 | 65536 |
| /17 | 255.255.128.0 | 128 | 32768 |
| /18 | 255.255.192.0 | 64 | 16384 |
| /19 | 255.255.224.0 | 32 | 8192 |
| /20 | 255.255.240.0 | 16 | 4096 |
| /21 | 255.255.248.0 | 8 | 2048 |
| /22 | 255.255.252.0 | 4 | 1024 |
| /23 | 255.255.254.0 | 2 | 512 |
| /24 | 255.255.255.0 | 1 | 254 |
| /25 | 255.255.255.128 | 1/2 | 126 |
| /26 | 255.255.255.192 | 1/4 | 62 |
| /27 | 255.255.255.224 | 1/8 | 32 |
| /28 | 255.255.255.240 | 1/16 | 16 |
| /29 | 255.255.255.248 | 1/32 | 8 |
| /30 | 255.255.255.252 | 1/64 | 4 |

Let's explain the meaning of each column, although you probably already know most of them.

**The CIDR Block**

The CIDR Block simply represents the number of bits used for the subnet mask. For example, /14 means 14 bits assigned to the subnet mask, it is a lot easier telling someone you have a 14 bit subnet mask rather than a subnet mask of 255.252.0.0 :)

Note: In the above paragraph, we called the 14 bits as a subnet mask, when in fact it's a supernet mask, but because when you configure any network device, the field you will need to enter the value is usually named as the 'subnet mask', we decided to name it 'subnet mask' aswell, in order to avoid confusion.

We would also like you to pay particular attention to the CIDR Block **/24**, and **/25** to **/30**. These blocks are highlighted in blue and yellow.

When we use a CIDR Block of **24** (24 bit subnet mask) we are not Supernetting ! This is a default subnet mask for a Class C network. With CIDR Blocks **/25** to **/30** we are actually Subnetting and not Supernetting !

Now you might wonder why we have them in the chart. The fact is that those particular CIDR Blocks are valid, regardless of whether applying them to a network means we are Subnetting and not Supernetting. If you have dealt with any ISPs and IP Address assignments, chances are you would have been given your IP Addresses in CIDR format.

A good example is if you wanted a permanent connection to your ISP and only required 2 IP Addresses, one for your router and one for your Firewall, you would be assigned one **/30** CIDR Block. With such a subnet mask you will have 4 IP Addresses, from which 2 will be reserved (one for the Network address and one for the Broadcast address) and you're left with 2 that you can assign to your hosts (router and firewall).

**The Supernet Mask**

Basically, this is your Subnet mask. When you configure the devices that will be attached to the specified network, this is the value you will enter as a Subnet mask. It's also the decimal value the CIDR Block specifies. For example, a /24 CIDR block means a 24 bit Subnet mask, which in its turn translates to 255.255.255.0 :) Simple stuff !

**Number of Class C Networks**

This number shows us how many Class C Networks are combined by using a specific Supernet mask or, if you like, CIDR Block. For example, the /24 CIDR Block, 255.255.255.0 Supernet mask is 1 Class C Network, whereas a /20 CIDR Block, 255.255.240.0 Supernet mask is 16 Class C networks.

**Number Of Hosts**

This value represents the number of hosts per Supernet. For example, when we use a /20 CIDR Block, which means a Subnet (or Supernet) mask of 255.255.240.0, we can have up to 4096 hosts. Pretty straightforward stuff.

There is one thing you must be careful of though ! The value 4096 does not represent the valid, usable IP Addresses. If you wanted to find out how many of these IP Addresses you can actually use, in other words, assign to hosts, then you simply take 2 IP Addresses from that number (the first and last IP Address), so you're left with 4094 IP Addresses to play with :)

Why take 2 away ? You shouldn't be asking questions like that if you have read the IP and Subnetting sections but I'll tell you anyway :) One is reserved for the Network Address and one for the Broadcast Address of that network !

**Summary**

That completes the explanation of the Supernetting/CIDR chart. You will see that Supernetting and Subnetting have quite a few things in common, and this is simply because they work on the same principle.

Again, if you have the whole topic, or certain sections hard to understand, you should give yourself a small break, and then come back for another round :)