

# subnetting cheatsheet



## context

dit document beschrijft hoe subnetting in mekaar zit

## CCNA Subnetting Cheat Sheet

### 1. IP Address Structure

IPv4 addresses are **32-bit** numbers divided into 4 octets:

```
192.168.10.5  
| 8 bits | 8 bits | 8 bits | 8 bits |
```

### 2. Classes (Old Way, Still Useful)

Class	First Octet Range	Default Mask	Use
A	1-126	/8	Large networks
B	128-191	/16	Medium networks
C	192-223	/24	Small networks
D	224-239	N/A	Multicast
E	240-254	N/A	Experimental

### 3. Subnet Mask Basics

A subnet mask tells which part is **network** and which part is **host**.

Example:

```
255.255.255.0 → /24
```

## 4. CIDR Notation

Subnet Mask	CIDR
255.0.0.0	/8
255.255.0.0	/16
255.255.255.0	/24
255.255.255.128	/25
255.255.255.192	/26
255.255.255.224	/27
255.255.255.240	/28
255.255.255.248	/29
255.255.255.252	/30

## 5. Subnetting Steps (Fast Method)

### Step 1: Convert mask to binary

Example:

```
/26 = 255.255.255.192  
= 11111111.11111111.11111111.11000000
```

### Step 2: Find number of subnet bits

\* /26 has **2 bits** for subnet (since default /24 + 2)

### Step 3: Calculate number of subnets

```
2^subnet_bits  
= 2^2 = 4 subnets
```

### Step 4: Calculate hosts per subnet

```
2^(host_bits) - 2  
= 2^6 - 2 = 62 hosts
```

## 6. Shortcut: Subnet Increments

If you know the subnet mask, the increment is the value of the **last 1 bit** in the mask.

Example: **/26 mask = 255.255.255.192**

Binary: 11000000  
Increment = 64

So subnets:

0, 64, 128, 192

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## 7. Key Rules

\* **Network address:** all host bits = 0 \* **Broadcast address:** all host bits = 1 \* **Cannot use network or broadcast addresses for hosts**

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## 8. Common Subnetting Values

Mask	Subnet Size	Hosts
/24	256	254
/25	128	126
/26	64	62
/27	32	30
/28	16	14
/29	8	6
/30	4	2

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## 9. Practice Example

**Given:** 192.168.1.0 /26 **Find subnets and ranges**

Subnets (increment 64):

192.168.1.0 → hosts .1 to .62 → broadcast .63  
192.168.1.64 → hosts .65 to .126 → broadcast .127  
192.168.1.128 → hosts .129 to .190 → broadcast .191  
192.168.1.192 → hosts .193 to .254 → broadcast .255

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## 10. Useful Mnemonic

**“Network, Subnet, Host”** Think of it as:

\* Network = **fixed** \* Subnet = **variable** \* Host = **variable**

## meer info

voeg hier linken toe naar verdere uitleg

### HOWTO

From:

<https://louslab.be/> - **Lou's lab**

Permanent link:

<https://louslab.be/doku.php?id=howto:subnetting&rev=1769121963>

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