

IP address

Internet Protocol is a set of rules, that makes internet work.

IPv4

32 bits - N.N.N.N, every number is in range $(0 - 255)_{10}$ or $(00000000 - 11111111)_2$
Problem: there are more than 4.294.967.296 devices.

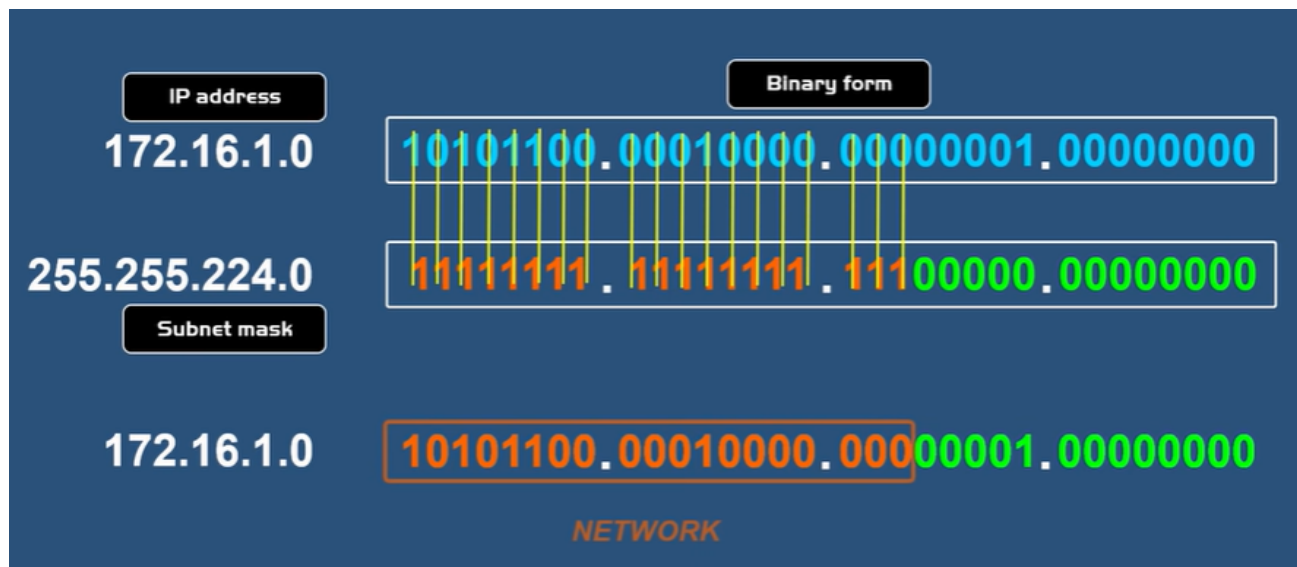
Subnet mask

$X.X.X.X$

octets

IP addresses have *network part* and *host part*, so networks can be logically divided into smaller groups, which is known as **subnetting**.

Subnet mask shows how many bits in the IP address are used for Network address.



Subnetting is done by changing the default subnet mask by borrowing some bits from host part.

Subnet mask

255.255.255.0

11111111 . 11111111 . 11111111 . 00000000

1 network with 254 hosts

Subnet mask

255.255.255.128

11111111 . 11111111 . 11111111 . 10000000

2 networks with 126 hosts

CLASS	FIRST OCTET ADDRESS	DEFAULT SUBNET MASK
A	1 – 126	255 . 0 . 0 . 0
B	128 – 191	255 . 255 . 0 . 0
C	192 – 223	255 . 255 . 255 . 0

Can produce up to 16 million hosts!

255.0.0.0

11111111 . 00000000 . 00000000 . 00000000

NETWORK

HOST

CIDR - Classless Inter-Domain Routing (slash notation)
198.126.0.1 /24 - number 24 counts the amount of 1s in subnet mask

IPv6

128 bits - 32 decimal numbers or 128 binary numbers

XXXX : XXXX : XXXX : XXXX : XXXX : XXXX : XXXX : XXXX