

ADDRESS CLASS: A, B, C

| Class: | A | B | C |
|---------------|---------------------------|-----------------------------|-------------------------------|
| Range | 0-127 | 128-191 | 192-223 |
| N/H | N.H.H.H | N.N.H.H | N.N.N.H |
| Network Bits | Nx8 = 8 | Nx8 = 16 | Nx8 = 24 |
| Host Bits | Hx8 = 24 | Hx8 = 16 | Hx8 = 8 |
| # Addresses | 16,777,210 | 66,536 | 256 |
| Private Range | 10.0.0.0 - 10.255.255.255 | 172.16.0.0 - 172.31.255.255 | 192.168.0.0 - 192.168.255.255 |
| Subnet Mask | 255.0.0.0 | 255.255.0.0 | 255.255.255.0 |

ADDRESS CLASS: D & E

| CLASS | RANGE | NOTE |
|-------|-----------|-------------------------------------|
| D | 224 - 239 | reserved for multicasting |
| E | 240 - 255 | reserved for research & development |

Power of 2 table

| | | | |
|----------------|-----|-----------------|--------|
| 2 ⁰ | 1 | 2 ⁸ | 256 |
| 2 ¹ | 2 | 2 ⁹ | 512 |
| 2 ² | 4 | 2 ¹⁰ | 1,024 |
| 2 ³ | 8 | 2 ¹¹ | 2,048 |
| 2 ⁴ | 16 | 2 ¹² | 4,096 |
| 2 ⁵ | 32 | 2 ¹³ | 8,192 |
| 2 ⁶ | 64 | 2 ¹⁴ | 16,384 |
| 2 ⁷ | 128 | 2 ¹⁵ | 32,768 |

BIT, VALUE, MASK

| BIT | VALUE | N-BITS / H-BITS | MASK |
|-----|-------|-----------------|----------|
| 1 | 128 | 1 / 7 | 10000000 |
| 2 | 192 | 2 / 6 | 11000000 |
| 3 | 224 | 3 / 6 | 11100000 |
| 4 | 240 | 4 / 4 | 11110000 |
| 5 | 248 | 5 / 3 | 11111000 |
| 6 | 252 | 6 / 2 | 11111100 |
| 7 | 254 | 7 / 1 | 11111110 |
| 8 | 255 | 8 / 0 | 11111111 |



SOME FORMULAS

BLOCKS FOR LARGE #s $2^H / 256 = \text{\# BLOCKS}$

NUMBER OF SUBNETS = 2^n (n = Number of borrowed bits from host)

NUMBER HOSTS PER SUBNET = $(2^h - 2)$ (h = Number of Host bits)

Hosts have always been with the "-2" part. Because the network address and broadcast address have always been unusable for hosts.

C

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