

CIDR	SUBNET MASK	WILDCARD	ADDRS	HOSTS
/8	255.0.0.0	0.255.255.255	16,777,216	16,777,214
/9	255.128.0.0	0.127.255.255	8,388,608	8,388,606
/10	255.192.0.0	0.63.255.255	4,194,304	4,194,302
/11	255.224.0.0	0.31.255.255	2,097,152	2,097,150
/12	255.240.0.0	0.15.255.255	1,048,576	1,048,574
/13	255.248.0.0	0.7.255.255	524,288	524,286
/14	255.252.0.0	0.3.255.255	262,144	262,142
/15	255.254.0.0	0.1.255.255	131,072	131,070
/16	255.255.0.0	0.0.255.255	65,536	65,534
/17	255.255.128.0	0.0.127.255	32,768	32,766
/18	255.255.192.0	0.0.63.255	16,384	16,382
/19	255.255.224.0	0.0.31.255	8,192	8,190
/20	255.255.240.0	0.0.15.255	4,096	4,094

CIDR	SUBNET MASK	WILDCARD	ADDRS	HOSTS
/21	255.255.248.0	0.0.7.255	2,048	2,046
/22	255.255.252.0	0.0.3.255	1,024	1,022
/23	255.255.254.0	0.0.1.255	512	510
/24	255.255.255.0	0.0.0.255	256	254
/25	255.255.255.128	0.0.0.127	128	126
/26	255.255.255.192	0.0.0.63	64	62
/27	255.255.255.224	0.0.0.31	32	30
/28	255.255.255.240	0.0.0.15	16	14
/29	255.255.255.248	0.0.0.7	8	6
/30	255.255.255.252	0.0.0.3	4	2
/31	255.255.255.254	0.0.0.1	2	2
/32	255.255.255.255	0.0.0.0	1	1

PRIVATE & SPECIAL RANGES

10.0.0.0/8	Private - RFC 1918
172.16.0.0/12	Private - RFC 1918
192.168.0.0/16	Private - RFC 1918
100.64.0.0/10	Carrier-grade NAT - RFC 6598
169.254.0.0/16	Link-local / APIPA
127.0.0.0/8	Loopback
224.0.0.0/4	Multicast - class D
192.0.2.0/24	Documentation - TEST-NET-1

RULES WORTH REMEMBERING

hosts = 2 ⁿ - 2	network + broadcast reserved
/31	2 usable - RFC 3021 point-to-point
/32	single host route
wildcard	inverse mask - Cisco ACLs, OSPF
lower TTL first	before a change, not after
nibble boundaries	/20 /24 /28 stay readable
size x2	leave room; renumbering hurts
non-contiguous	not a valid mask - 255.255.0.255

WORKED EXAMPLE: SPLIT 172.16.4.0/22 INTO /26

172.16.4.0/26	.1 - .62 (62 hosts)
172.16.4.64/26	.65 - .126 (62 hosts)
172.16.4.128/26	.129 - .190 (62 hosts)
172.16.4.192/26	.193 - .254 (62 hosts)
172.16.5.0/26	... continues through
172.16.7.192/26	16 subnets total
2 ^{^(26-22)} = 16	subnets of 64 addresses each

POWERS OF TWO

2 ¹ = 2	/31
2 ² = 4	/30
2 ³ = 8	/29
2 ⁴ = 16	/28
2 ⁵ = 32	/27
2 ⁶ = 64	/26
2 ⁷ = 128	/25
2 ⁸ = 256	/24