

Subnet mask v.s. CIDR

Netmask	Netmask (binary)	CIDR	Notes
255.255.255.255	11111111.11111111.11111111.11111111	/32	Host (single addr)
255.255.255.254	11111111.11111111.11111111.11111110	/31	Unuseable
255.255.255.252	11111111.11111111.11111111.11111100	/30	2 useable
255.255.255.248	11111111.11111111.11111111.11111000	/29	6 useable
255.255.255.240	11111111.11111111.11111111.11110000	/28	14 useable
255.255.255.224	11111111.11111111.11111111.11100000	/27	30 useable
255.255.255.192	11111111.11111111.11111111.11000000	/26	62 useable
255.255.255.128	11111111.11111111.11111111.10000000	/25	126 useable
255.255.255.0	11111111.11111111.11111111.00000000	/24	"Class C" 254 useable
255.255.254.0	11111111.11111111.11111110.00000000	/23	2 Class C's
255.255.252.0	11111111.11111111.11111100.00000000	/22	4 Class C's
255.255.248.0	11111111.11111111.11111000.00000000	/21	8 Class C's
255.255.240.0	11111111.11111111.11110000.00000000	/20	16 Class C's
255.255.224.0	11111111.11111111.11100000.00000000	/19	32 Class C's
255.255.192.0	11111111.11111111.11000000.00000000	/18	64 Class C's
255.255.128.0	11111111.11111111.10000000.00000000	/17	128 Class C's
255.255.0.0	11111111.11111111.00000000.00000000	/16	"Class B"
255.254.0.0	11111111.11111110.00000000.00000000	/15	2 Class B's
255.252.0.0	11111111.11111100.00000000.00000000	/14	4 Class B's
255.248.0.0	11111111.11111000.00000000.00000000	/13	8 Class B's
255.240.0.0	11111111.11110000.00000000.00000000	/12	16 Class B's
255.224.0.0	11111111.11100000.00000000.00000000	/11	32 Class B's
255.192.0.0	11111111.11000000.00000000.00000000	/10	64 Class B's
255.128.0.0	11111111.10000000.00000000.00000000	/9	128 Class B's
255.0.0.0	11111111.00000000.00000000.00000000	/8	"Class A"
254.0.0.0	11111110.00000000.00000000.00000000	/7	
252.0.0.0	11111100.00000000.00000000.00000000	/6	
248.0.0.0	11111000.00000000.00000000.00000000	/5	
240.0.0.0	11110000.00000000.00000000.00000000	/4	
224.0.0.0	11100000.00000000.00000000.00000000	/3	

192.0.0.0	11000000.00000000.00000000.00000000 /2
128.0.0.0	10000000.00000000.00000000.00000000 /1
0.0.0.0	00000000.00000000.00000000.00000000 /0 IP space

Host/Subnet Table

CLASS A HOST/SUBNET TABLE

CIDR	Netmask	Effective Subnets	Hosts/Subnet	Bits
/9	255.128.0.0	2	8388606	1
/10	255.192.0.0	4	4194302	2
/11	255.224.0.0	8	2097150	3
/12	255.240.0.0	16	1048574	4
/13	255.248.0.0	32	524286	5
/14	255.252.0.0	64	262142	6
/15	255.254.0.0	128	131070	7
/16	255.255.0.0	256	65534	8
/17	255.255.128.0	512	32766	9
/18	255.255.192.0	1024	16382	10
/19	255.255.224.0	2048	8190	11
/20	255.255.240.0	4096	4094	12
/21	255.255.248.0	8192	2046	13
/22	255.255.252.0	16384	1022	14
/23	255.255.254.0	32768	510	15
/24	255.255.255.0	65536	254	16
/25	255.255.255.128	131072	126	17
/26	255.255.255.192	262144	62	18
/27	255.255.255.224	524288	30	19
/28	255.255.255.240	1048576	14	20
/29	255.255.255.248	2097152	6	21
/30	255.255.255.252	4194304	2	22
/31	255.255.255.254	8388608	0	23

CLASS B HOST/SUBNET TABLE

CIDR	Netmask	Effective Subnets	Hosts/Subnet	Bits
/17	255.255.128.0	2	32766	1
/18	255.255.192.0	4	16382	2
/19	255.255.224.0	8	8190	3
/20	255.255.240.0	16	4094	4
/21	255.255.248.0	32	2046	5
/22	255.255.252.0	64	1022	6
/23	255.255.254.0	128	510	7
/24	255.255.255.0	256	254	8
/25	255.255.255.128	512	126	9
/26	255.255.255.192	1024	62	10
/27	255.255.255.224	2048	30	11
/28	255.255.255.240	4096	14	12
/29	255.255.255.248	8192	6	13
/30	255.255.255.252	16384	2	14
/31	255.255.255.254	32768	0	15

CLASS C HOST/SUBNET TABLE

IPv4 SUBNETS

SUBNETS

CIDR	SUBNET MASK	# OF ADDRESSES	WILDCARD
/32	255.255.255.255	1	0.0.0.0
/31	255.255.255.254	2	0.0.0.1
/30	255.255.255.252	4	0.0.0.3
/29	255.255.255.248	8	0.0.0.7
/28	255.255.255.240	16	0.0.0.15
/27	255.255.255.224	32	0.0.0.31
/26	255.255.255.192	64	0.0.0.63
/25	255.255.255.128	128	0.0.0.127
/24	255.255.255.0	256	0.0.0.255
/23	255.255.254.0	512	0.0.1.255
/22	255.255.252.0	1,024	0.0.3.255
/21	255.255.248.0	2,048	0.0.7.255
/20	255.255.240.0	4,096	0.0.15.255
/19	255.255.224.0	8,192	0.0.31.255
/18	255.255.192.0	16,384	0.0.63.255
/17	255.255.128.0	32,768	0.0.127.255
/16	255.255.0.0	65,536	0.0.255.255
/15	255.254.0.0	131,072	0.1.255.255
/14	255.252.0.0	262,144	0.3.255.255
/13	255.248.0.0	524,288	0.7.255.255
/12	255.240.0.0	1,048,576	0.15.255.255
/11	255.224.0.0	2,097,152	0.31.255.255
/10	255.192.0.0	4,194,304	0.63.255.255
/9	255.128.0.0	8,388,608	0.127.255.255
/8	255.0.0.0	16,777,216	0.255.255.255
/7	254.0.0.0	33,554,432	1.255.255.255
/6	252.0.0.0	67,108,864	3.255.255.255
/5	248.0.0.0	134,217,728	7.255.255.255
/4	240.0.0.0	268,435,456	15.255.255.255
/3	224.0.0.0	536,870,912	31.255.255.255
/2	192.0.0.0	1,073,741,824	63.255.255.255
/1	128.0.0.0	2,147,483,648	127.255.255.255
/0	0.0.0.0	4,294,967,296	255.255.255.255

BINARY TO DECIMAL



IP ADDRESS CLASSES

A	0.0.0.0 - 127.255.255.255
B	128.0.0.0 - 191.255.255.255
C	192.0.0.0 - 223.255.255.255
D	224.0.0.0 - 239.255.255.255
E	240.0.0.0 - 255.255.255.255

RESERVED (PRIVATE) RANGES

CLASS A	10.0.0.0 - 10.255.255.255
CLASS B	172.16.0.0 - 172.31.255.255
CLASS C	192.168.0.0 - 192.168.255.255
LOCALHOST	127.0.0.0 - 127.255.255.255
ZEROCONF (APIPA/BONJOUR)	169.254.0.0 - 169.254.255.255

DECIMAL TO BINARY

SUBNET MASK	WILDCARD
255	1111 1111
254	1111 1110
252	1111 1100
248	1111 1000
240	1111 0000
224	1110 0000
192	1100 0000
128	1000 0000
0	0000 0000

TERMINOLOGY

WILDCARD MASK	A wildcard mask indicates which parts of an IP address are available for examination.
CIDR	Classless interdomain routing was developed to provide more granularity than legacy classful addressing; CIDR notation is expressed as /XX

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