

# 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

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

## RESERVED (PRIVATE) RANGES

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

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

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