PAESSLER
THE MONITORING EXPERTS

IPv4 subnets

Subnets

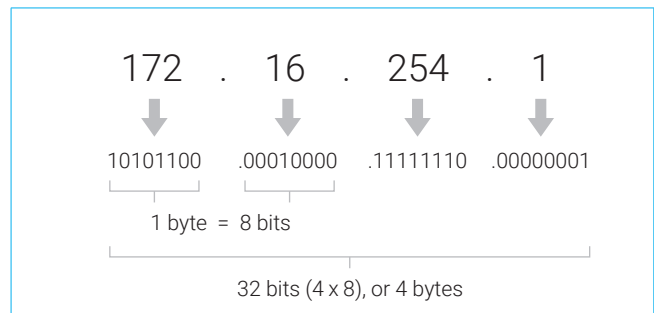| CIDR	Subnet mask	# of addresses	Wildcard
/32	255.255.255.255	1	0.0.0.0
/31	255.255.255.254	2	0.0.0.1
/30	255.255.255.252	4	0.0.0.3
/29	255.255.255.248	8	0.0.0.7
/28	255.255.255.240	16	0.0.0.15
/27	255.255.255.224	32	0.0.0.31
/26	255.255.255.192	64	0.0.0.63
/25	255.255.255.128	128	0.0.0.127
/24	255.255.255.0	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

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

Decimal to binary

Subnet mask		Wildcard	
255	1111 1111	0	0000 0000
254	1111 1110	1	0000 0001
252	1111 1100	3	0000 0011
248	1111 1000	7	0000 0111
240	1111 0000	15	0000 1111
224	1110 0000	31	0001 1111
192	1100 0000	63	0011 1111
128	1000 0000	127	0111 1111
0	0000 0000	255	1111 1111

Binary to decimal

172 . 16 . 254 . 1

10101100 .00010000 .11111110 .00000001

1 byte = 8 bits

32 bits (4 x 8), or 4 bytes

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
Internal routing (RFC 6598)	100.64.0.0	–	100.127.255.255