



Network

Subnet Masks

Three Mask Formats

- Binary
- Dotted-decimal notation (DDN)
- Prefix (also called CIDR)

Examples

- 11111111 11111111 11111111 00000000
- 255.255.255.0
- /24

Binary Format Mask Rules

- ❑ The value must not interleave 1s and 0s.
- ❑ If 1s exist, they are on the left.
- ❑ If 0s exist, they are on the right.

Illegal values:

```
1010101001010101 11110000 00001111
00000000 00000000 00000000 11111111
```

Converting Between Binary and Prefix Masks

Binary Mask	Logic	Prefix Mask
11111111 11111111 11000000 00000000	Count 8 + 8 + 2 = 18 binary 1s	/18
11111111 11111111 11111111 11110000	Count 8 + 8 + 8 + 4 = 28 binary 1s	/28
11111111 11111000 00000000 00000000	Count 8 + 5 = 13 binary 1s	/13

Prefix Mask	Logic	Binary Mask
/18	Write 18 1s, then 14 0s, total 32	11111111 11111111 11000000 00000000
/28	Write 28 1s, then 4 0s, total 32	11111111 11111111 11111111 11110000
/13	Write 13 1s, then 19 0s, total 32	11111111 11111000 00000000 00000000

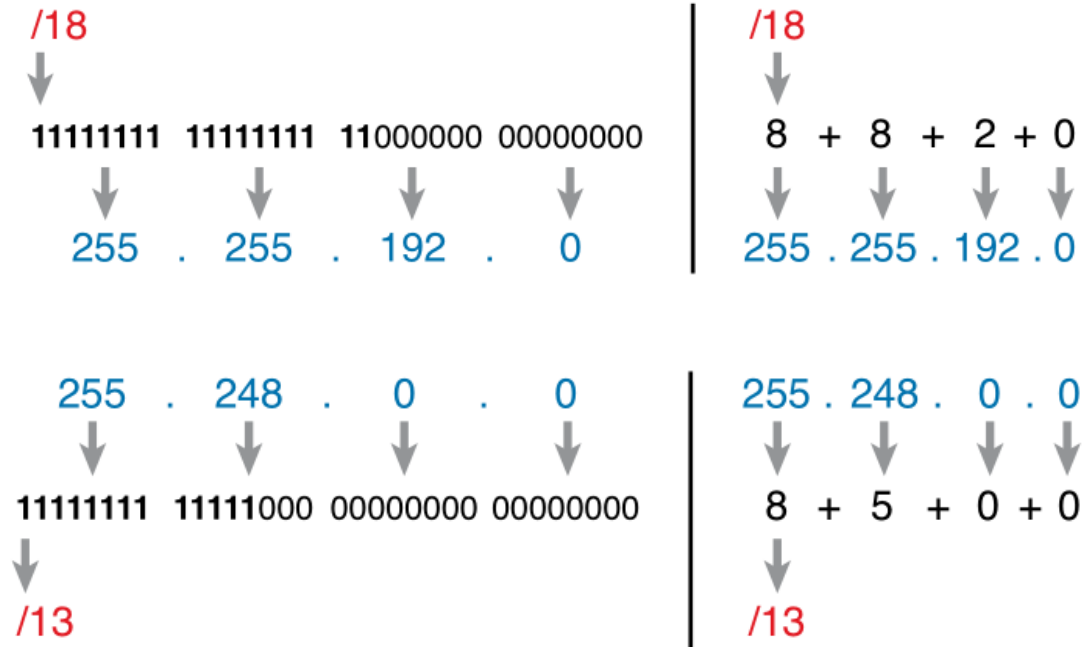
Converting Between Binary and DDN Masks

Binary Mask Octet	Decimal Ecuivalent	Number of Binary 1s
00000000	0	0
10000000	128	1
11000000	192	2
11100000	224	3
11110000	240	4
11111000	248	5
11111100	252	6
11111110	254	7
11111111	255	8

Converting Between Binary and DDN Masks

Binary Mask	Logic	Decimal Mask
11111111 11111111 11000000 00000000	11111111 maps to 255 11000000 maps to 192 00000000 maps to 0	255.255.192.0
11111111 11111111 11111111 11110000	11111111 maps to 255 11110000 maps to 240	255.255.255.240
11111111 11111000 00000000 00000000	11111111 maps to 255 11111000 maps to 248 00000000 maps to 0	255.248.0.0

Converting Between Prefix and DDN Mask



Quiz

1. Which of the following answers lists the prefix (CIDR) format equivalent of 255.255.254.0?
 - A. /19
 - B. /20
 - C. /23
 - D. /24
 - E. /25
2. Which of the following answers lists the prefix (CIDR) format equivalent of 255.255.255.240?
 - A. /26
 - B. /28
 - C. /27
 - D. /30
 - E. /29
3. Which of the following answers lists the dotted-decimal notation (DDN) equivalent of /30?
 - A. 255.255.255.192
 - B. 255.255.255.252
 - C. 255.255.255.240
 - D. 255.255.254.0
 - E. 255.255.255.0

THANK YOU