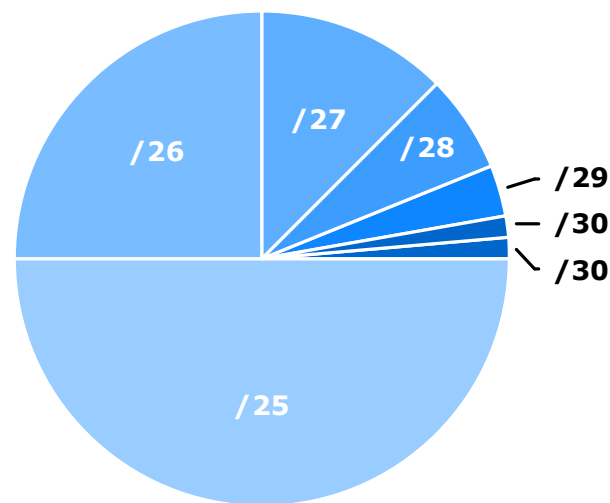


| Subnets |                 |               |                 |
|---------|-----------------|---------------|-----------------|
| CIDR    | Subnet Mask     | Addresses     | Wildcard        |
| /32     | 255.255.255.255 | 1             | 0.0.0.0         |
| /31     | 255.255.255.254 | 2             | 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 |

| Decimal to Binary |          |      |                      |
|-------------------|----------|------|----------------------|
| Subnet Mask       | Wildcard |      |                      |
| <b>255</b>        | 1111     | 1111 | <b>0</b> 0000 0000   |
| <b>254</b>        | 1111     | 1110 | <b>1</b> 0000 0001   |
| <b>252</b>        | 1111     | 1100 | <b>3</b> 0000 0011   |
| <b>248</b>        | 1111     | 1000 | <b>7</b> 0000 0111   |
| <b>240</b>        | 1111     | 0000 | <b>15</b> 0000 1111  |
| <b>224</b>        | 1110     | 0000 | <b>31</b> 0001 1111  |
| <b>192</b>        | 1100     | 0000 | <b>63</b> 0011 1111  |
| <b>128</b>        | 1000     | 0000 | <b>127</b> 0111 1111 |
| <b>0</b>          | 0000     | 0000 | <b>255</b> 1111 1111 |

### Subnet Proportion



### Classful Ranges

- 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 Ranges

- RFC 1918** 10.0.0.0 - 10.255.255.255
- Localhost** 127.0.0.0 - 127.255.255.255
- RFC 1918** 172.16.0.0 - 172.31.255.255
- RFC 1918** 192.168.0.0 - 192.168.255.255

### Terminology

**CIDR**  
Classless interdomain routing was developed to provide more granularity than legacy classful addressing; CIDR notation is expressed as /XX

**VLSM**  
Variable-length subnet masks are an arbitrary length between 0 and 32 bits; CIDR relies on VLSMs to define routes