Private Address Ranges

The Internet Assigned Numbers Authority (IANA) has assigned several address ranges to be used by private networks.

Address ranges to be use by private networks are:

* Class A: 10.0.0.0 to 10.255.255.255
* Class B: 172.16.0.0 to 172.31.255.255
* Class C: 192.168.0.0 to 192.168.255.255

An IP address within these ranges is therefore considered non-routable, as it is not unique. Any private network that needs to use IP addresses internally can use any address within these ranges without any coordination with IANA or an Internet registry. Addresses within this private address space are only unique within a given private network.

All addresses outside these ranges are considered public.

| **CIDR** | **SUBNET MASK** | **WILDCARD MASK** | **# OF IP ADDRESSES** | **# OF USABLE IP ADDRESSES** |
| --- | --- | --- | --- | --- |
| /32 | 255.255.255.255 | 0.0.0.0 | 1 | 1 |
| /31 | 255.255.255.254 | 0.0.0.1 | 2 | 2\* |
| /30 | 255.255.255.252 | 0.0.0.3 | 4 | 2 |
| /29 | 255.255.255.248 | 0.0.0.7 | 8 | 6 |
| /28 | 255.255.255.240 | 0.0.0.15 | 16 | 14 |
| /27 | 255.255.255.224 | 0.0.0.31 | 32 | 30 |
| /26 | 255.255.255.192 | 0.0.0.63 | 64 | 62 |
| /25 | 255.255.255.128 | 0.0.0.127 | 128 | 126 |
| /24 | 255.255.255.0 | 0.0.0.255 | 256 | 254 |
| /23 | 255.255.254.0 | 0.0.1.255 | 512 | 510 |
| /22 | 255.255.252.0 | 0.0.3.255 | 1,024 | 1,022 |
| /21 | 255.255.248.0 | 0.0.7.255 | 2,048 | 2,046 |
| /20 | 255.255.240.0 | 0.0.15.255 | 4,096 | 4,094 |
| /19 | 255.255.224.0 | 0.0.31.255 | 8,192 | 8,190 |
| /18 | 255.255.192.0 | 0.0.63.255 | 16,384 | 16,382 |
| /17 | 255.255.128.0 | 0.0.127.255 | 32,768 | 32,766 |
| /16 | 255.255.0.0 | 0.0.255.255 | 65,536 | 65,534 |
| /15 | 255.254.0.0 | 0.1.255.255 | 131,072 | 131,070 |
| /14 | 255.252.0.0 | 0.3.255.255 | 262,144 | 262,142 |
| /13 | 255.248.0.0 | 0.7.255.255 | 524,288 | 524,286 |
| /12 | 255.240.0.0 | 0.15.255.255 | 1,048,576 | 1,048,574 |
| /11 | 255.224.0.0 | 0.31.255.255 | 2,097,152 | 2,097,150 |
| /10 | 255.192.0.0 | 0.63.255.255 | 4,194,304 | 4,194,302 |
| /9 | 255.128.0.0 | 0.127.255.255 | 8,388,608 | 8,388,606 |
| /8 | 255.0.0.0 | 0.255.255.255 | 16,777,216 | 16,777,214 |
| /7 | 254.0.0.0 | 1.255.255.255 | 33,554,432 | 33,554,430 |
| /6 | 252.0.0.0 | 3.255.255.255 | 67,108,864 | 67,108,862 |
| /5 | 248.0.0.0 | 7.255.255.255 | 134,217,728 | 134,217,726 |
| /4 | 240.0.0.0 | 15.255.255.255 | 268,435,456 | 268,435,454 |
| /3 | 224.0.0.0 | 31.255.255.255 | 536,870,912 | 536,870,910 |
| /2 | 192.0.0.0 | 63.255.255.255 | 1,073,741,824 | 1,073,741,822 |
| /1 | 128.0.0.0 | 127.255.255.255 | 2,147,483,648 | 2,147,483,646 |
| /0 | 0.0.0.0 | 255.255.255.255 | 4,294,967,296 | 4,294,967,294 |