```
  Hex    2    0    0    1 : 0    d    b    8 : c    0    a    8 :: 0    0    0           0 : 0 0 0 0 : 0 0 0 0 : 0 0 0 0 : 0 0 0 0
Binary 0010 0000 0000 0001 : 0000 1101 1011 1000 : 1100 0000 1010 1000 :: 0000 0000 0000 0000
 :
```

After borrowing 9 bits, the red bits are unchanged, but now the subnetted blue bits are shown:

```
  Hex    2    0    0    1 : 0    d    b    8 : c    0    a    8 : 0    0    0    0 :
Binary 0010 0000 0000 0001 : 0000 1101 1011 1000 : 1100 0000 1010 1000 : 0000 0000 0000 0000
 :
Decimal                                                                   0    1
Binary                                                                    0000 0001
  Hex                                                                     0    1
Decimal                                                                   0    2
Binary                                                                    0000 0010
  Hex                                                                     0    2
Decimal                                                                   0    3
Binary                                                                    0000 0011
  Hex                                                                     0    3
Decimal                                                                   0    4
Binary                                                                    0000 0100
  Hex                                                                     0    4
Decimal                                                                   0    5
Binary                                                                    0000 0101
  Hex                                                                     0    5
Decimal                                                                   0    6
Binary                                                                    0000 0110
  Hex                                                                     0    6
Decimal                                                                   0    7
Binary                                                                    0000 0111
  Hex                                                                     0    7
Decimal                                                                   0    8
Binary                                                                    0000 1000
  Hex                                                                     0    8
Decimal                                                                   0    9
Binary                                                                    0000 1001
  Hex                                                                     0    9
Decimal                                                                   0   10
Binary                                                                    0000 1010
  Hex                                                                     0    A
Decimal                                                                   0   11
Binary                                                                    0000 1011
  Hex                                                                     0    B
                                                                  □   +64 more host bits    □
```

Decimal	0	12
Binary	0000	1100
Hex	0	C
Decimal	0	13
Binary	0000	1101
Hex	0	D
Decimal	0	14
Binary	0000	1110
Hex	0	E
Decimal	0	15
Binary	0000	1111
Hex	0	F

Far right hextet reached max value, F, reset far right hextet to 0, increment next hextet by 1. Continue listing networks.

Hex	1	0
Binary	0001	0000
Decimal	1	1
Binary	0001	0001
Hex	1	1
Decimal	1	2
Binary	0001	0010
Hex	1	2
Decimal	1	3
Binary	0001	0011
Hex	1	3
Decimal	1	4
Binary	0001	0100
Hex	1	4
Decimal	1	5
Binary	0001	0101
Hex	1	5
Decimal	1	6
Binary	0001	0110
Hex	1	6
Decimal	1	7
Binary	0001	0111
Hex	1	7
Decimal	1	8
Binary	0001	1000
Hex	1	8
Decimal	1	9
Binary	0001	1001
Hex	1	9
Decimal	1	10
Binary	0001	1010
Hex	1	A
Decimal	1	11

```
Binary                                                                  0001 1011
  Hex                                                                     1    B
Decimal                                                                   1   12

 Binary                                                                 0001 1100

  Hex                                                                   1     C

 Decimal                                                                1    13

 Binary                                                                 0001 1101

  Hex                                                                   1     D

 Decimal                                                                1    14

 Binary                                                                 0001 1110

  Hex                                                                   1     E

 Decimal                                                                1    15

 Binary                                                                 0001 1111

  Hex                                                                   1     F

   □                                                                    □     □

   □                                                                    □     □

   □                                                                    □     □
                                                                        0111 0000
                                                                        7     0
   □                                                                    □     □

   □                                                                    □     □
                                                                        0111 1111
                                                                        7     F    < This address is valid to be assigned on

Once we reach this number, to increment again would change a blue bit, a network bit.          an interface in IOS.
So the next network ID is listed on the next line:
          2    0    0     1 : 0     d    b     8 : c     0    a     8 : 0     0    8    0    < If I enter this address (with host bits
        0010 0000 0000 0001 : 0000 1101 1011 1000 : 1100 0000 1010 1000 : 0000 0000 1000 0000 all zero) on an interface, this error
                                    The process repeats with green bits all zero             appears:
                                    until the green bits are all ones, then the              %2001:DB8:C0A8:80::/57 should not be
                                    blue bits would roll to 2, then 3, all the               configured on {int} a subnet router anycast
                                    way up to F, then the blue bits would roll to            If I enter that same address and end the
                                                                  0000 0001 0000             command with "anycast" no error appears.

                                    and so on.  This means the progression of                eg:ipv6 add 2001:DB8:C0A8:80::/57 anycast

                                    network IDs would look like this:                        no error on the above command
```

If I enter ipv6 address 2001:DB8:C0A8:7F:FFFF:FFFF:FFFF:FFFF/57

I see this error:

{address} should not be configured on {int}, a reserved anycast

In both error cases above, the entered address was

accepted on the interface in spite of the error.

0 0 0 0

0 0 8 0

0 1 0 0

0 1 8 0

0 2 0 0

0 2 8 0

□

□

□

0 A 0 0

0 A 8 0

0 B 0 0

0 B 8 0

□

□

□

0 F 0 0

0 F 8 0

1 0 0 0

1 0 8 0

2 0 0 0

2 0 8 0

□

□

□

F 0 0 0

F 0 8 0

F 1 0 0

F 1 8 0

□

□

□

F A 0 0

F A 8 0

F F 0 0

F F 8 0

Once you reach FF80, all the blue bits are now ones, which means you have reached your last subnet. Note the blue bits values:

2 0 0 1 : 0 d b 8 : c 0 a 8 : F F 8 0 < Attempting to assign this address (with
0010 0000 0000 0001 : 0000 1101 1011 1000 : 1100 0000 1010 1000 : 1111 1111 1000 0000 hosts all zero) results in error:
...should not be configured on {int},
a subnet router anycast

Now allow the green bits to roll through all their values in succession in the last subnet.

The next value after FF80 is: F F 8 1 < This is not a subnet ID, it is one of the
1111 1111 1000 0001 available IPv6 addresses.

Until all green bits set to one: F F F F < This is not a subnet ID, it is one of the
1111 1111 1111 1111 available IPv6 addresses.

If you tried to continue, you would have to change a red bit, which is not allowed, you don't own those bits, the ISP does.