

that particular network.

## Rules for Assigning Network ID

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Hosts that are located on the same physical network are identified by the network ID, as all hosts on the same physical network are assigned the same network ID. The network ID is assigned based on the following rules—

- The network ID can't start with 127 bcz 127 belongs to the class A address & is reserved for internal loopback functions.
  - All bits of network ID set to 1 are reserved for used as an IP broadcast address and therefore, can't be used.
  - All bits of network ID set to 0 are used to denote a specific host on the local network & are not routed & therefore can't be used.

- CIDR (classless interDomain Routing)

16 17 18 19 20 21 22 23  
24 25 26 27 28

EUI VPC1 - 10.0.0.0/22 - 1024 IP Address

Total No. of bit in IPV4-32

## Bits in CIDR IP Address -22

$$32 - 22 = 10, \text{ so } 10 = 1024 \text{ IP Address.}$$

$$123 + 32 - 23 = 9, \quad 129 = 512$$

$$124 \quad 32 - 24 = 8, \quad 2^8 = 256$$

$$125 - 32 - 25 - 7 = 128$$

$$126 \quad 32 - 2^6 = 6, 2^6 = 64$$

$$127 \quad 32 - 2^7 = 5, 2^5 = 32$$

$$128 \quad 32 - 2^8 = 4, 2^4 = 16$$

$$129 \quad 32 - 2^11 = 11, 2^{11} = 2048$$

$$130 \quad 32 - 2^{12} = 12, 2^{12} = 4096$$

$$131 \quad 32 - 2^{13} = 13, 2^{13} = 8192$$

$$132 \quad 32 - 2^{14} = 14, 2^{14} = 16384$$

$$133 \quad 32 - 2^{15} = 15, 2^{15} = 32768$$

$$134 \quad 32 - 2^{16} = 16, 2^{16} = 65536$$

Eg1 VPC1 -  $10.0.0.0/24$  - 256 IP Addresses

Total no. of Bits in IPV4 - 32

Bits in CIDR IP Address - 24

$$32 - 24 = 8, 2^8 = 256 \text{ IP Addresses}$$

$10.0.0.0, 10.0.0.1, 10.0.0.2, \dots, 10.0.0.255$

Eg2 VPC2 -  $10.0.0.0/23$  - 512 IP Addresses

Total no. of Bits in IPV4 - 32

Bits in CIDR IP Address - 23

$$32 - 23 = 9, 2^9 = 512 \text{ IP Addresses}$$

$10.0.0.0, 10.0.0.1, 10.0.0.2, \dots, 10.0.0.255,$

$10.0.1.0, 10.0.1.1, \dots, 10.0.1.255.$

VPC3

$10.0.0.0/22$  - 512 IP Addresses

256  $10.0.0.0 \dots 10.0.0.1 \dots 10.0.0.255$

256  $10.0.1.0, 10.0.1.1, 10.0.1.2 \dots 10.0.1.255$

256  $10.0.2.0, 10.0.2.1, 10.0.2.2 \dots 10.0.2.255$

1024  $10.0.3.0, 10.0.3.1 \dots 10.0.3.255$

{ VPC3 - 10.0.0.0/24 2048  
256 = 8  
 { VPC4 - 10.0.0.0/25 128  
 { 128 10.0.0.0, 10.0.0.1 - - - 10.0.0.127  
 { VPC5 - 10.0.0.0/26 64  
 { 64 10.0.0.0 - - - 10.0.0.63  
 { VPC6 - 10.0.0.0/27 32 32  
 { 32 10.0.0.0 - - - 10.0.0.31  
 { VPC7 - 10.0.0.0/28 16 15x2  
 { 16 10.0.0.0 - - - 10.0.0.15

VCP8 10.0.0.0/22 2048

256 10.0.0.0 - - - 10.0.0.255

256 10.0.1.0 - - - 10.0.1.255

256 10.0.2.0 - - - 10.0.2.255

256 10.0.3.0 - - - 10.0.3.255

256 10.0.4.0 - - - 10.0.4.255

256 10.0.5.0 - - - 10.0.5.255

256 10.0.6.0 - - - 10.0.6.255

256 10.0.7.0 - - - 10.0.7.255

<u>VPC0</u>	10.0.0.0/20	4096	<u>4096</u> = 16
2048	10.0.0.0	-	-
256	10.0.7.0	-	10.0.7.255
<u>2304</u>	10.0.8.0	-	10.0.8.255
<u>2560</u>	10.0.9.0	10.0.0.0 - 0.0.0.01	<u>8192</u> = 32
<u>2816</u>	10.0.10.0	10.0.0.0 - 0.0.0.01	<u>486</u> = 32
<u>3072</u>	10.0.11.0	0.0.0.02	<u>16384</u> = 64
<u>3332</u>	10.0.12.0	0.0.0.01	<u>256</u> = 128
<u>3584</u>	10.0.13.0	0.0.0.01	<u>32768</u> = 128
<u>3844</u>	10.0.14.0	0.0.0.01	<u>127.255</u>
<u>4100</u>	10.0.15.0	0.0.0.01	<u>65536</u> = 256

VPC12 :- 10.0.0.0/18 16384

$$\begin{array}{r} 8192 \\ - 256 \\ \hline 8 \end{array}$$

8192 10.0.31.0  
10.0.63.255

$$\begin{array}{r} 32 \\ - 62 \\ \hline 62+1 \end{array}$$

VPC13 10.0.0.0/17 32,768  
10.0.0.0 --- 10.0.127.255

$$\begin{array}{r} 63 \\ - 126 \\ \hline 126+1 \end{array}$$

VPC14 10.0.0.0/16 65,536

$$\begin{array}{r} 128 \\ - 10.0.255.255 \\ \hline 254+1 \end{array}$$

~~Days~~

① VPC2 - 20.15.0.0/23 — 512

Range 20.15.0.0 to 20.15.1.255

② VPC3 - 20.15.0.0/24 — 256

Range 20.15.0.0 to ~~255~~ 20.15.0.255

③ VPC4 - 20.15.0.0/25 — 128

Range 20.15.0.0 to 20.15.0.127

④ VPC5 - 20.15.0.0/26 — 64

Range 20.15.0.0 to 20.15.0.63

⑤ VPC6 - 20.15.0.0/27 — 32

Range 20.15.0.0 to 20.15.0.31

⑥ VPC7 -  $20.15.0.0/28 \rightarrow 16$

Range -  $20.15.0.0$  to  $20.15.0.15$

① VPC8 -  $20.15.0.0/22 - 1024$

Range -  $20.15.0.0$  to  $20.15.3.255$

② VPC9 -  $20.15.0.0/21 - 2048$

Range :  $20.15.0.0$  to  $20.15.7.255$

③ VPC10 -  $20.15.0.0/20 - 4096$

Range -  $20.15.0.0$  to  $20.15.15.255$

④ VPC11 -  $20.15.0.0/19 - 8192$

Range -  $20.15.0.0$  to  $20.15.31.255$

⑤ VPC12 -  $20.15.0.0/18 - 16,384$

Range -  $20.15.0.0$  to  $20.15.63.255$

⑥ VPC13 -  $20.15.0.0/17 - 32,768$

Range -  $20.15.0.0$  to  $20.15.127.255$

⑦ VPC14 -  $20.15.0.0/16 - 65,536$

Range -  $20.15.0.0$  to  $20.15.255.255$

(18.0.21.02 to 20.0.21.02)

Eg1: VPC1 - 20.15.0.0/22 -

Subnet 1 - 256 IP's - 20.15.0.0/24

Subnet 2 - 256 IP's - 20.15.1.0/24

Subnet 3 - 256 IP's - 20.15.2.0/24

Subnet 4 - 256 IP's - 20.15.3.0/24

1024  
4

(256)

Eg2: VPC2 - 20.15.0.0/21 -

Subnet 1 - 512 IP's - 20.15.0.0/23

Subnet 2 - 512 IP's - 20.15.2.0/23

Subnet 3 - 512 IP's - 20.15.4.0/23

Subnet 4 - 512 IP's - 20.15.6.0/23

2048  
4

(512)

Eg3: VPC3 - 20.15.0.0/20

Subnet 1 - 1024 IP's - 20.15.0.0/22

4096  
2

Subnet 2 - 1024 IP's - 20.15.4.0/22

2048

Subnet 3 - 1024 IP's - 20.15.8.0/22

Subnet 4 - 1024 IP's - 20.15.12.0/22

Eg4: VPC4 - 20.15.0.0/19

8192 = 2048

Subnet 1 - 2048 IP's - 20.15.0.0/21

4

Subnet 2 - 2048 IP's - 20.15.8.0/21

Subnet 3 - 2048 IP's - 20.15.16.0/21

Subnet 4 - 2048 IP's - 20.15.24.0/21

Eg5: VPC5 - 20.15.0.0/18

16384

Subnet 1 - 4096 IP's - 20.15.0.0/20

4096

Subnet 2 - 4096 IP's - 20.15.16.0/20

Subnet 3 - 4096 IP's - 20.15.32.0/20

Subnet 4 - 4096 IP's - 20.15.48.0/20

EG6:- VPC6 - 20.15.0.0/17 -

Subnet 1 - 8192 IP's - 20.15.0.0/19  
 Subnet 2 - 8192 IP's - 20.15.32.0/19  
 Subnet 3 - 8192 IP's - 20.15.64.0/19  
 Subnet 4 - 8192 IP's - 20.15.96.0/19

32768  
4 = 8192

32  
3  
96

EG7:- VPC7 - 20.15.0.0/16 -

Subnet 1 - 16384 IP's - 20.15.0.0/18  
 Subnet 2 - 16384 IP's - 20.15.64.0/18  
 Subnet 3 - 16384 IP's - 20.15.128.0/18  
 Subnet 4 - 16384 IP's - 20.15.192.0/18

65536

64  
128  
64  
192

EG8:- VPC8 - 20.15.0.0/18 -

Subnet 1 - 4096 IP's - 20.15.0.0/20 → 20.15.15.255  
 Subnet 2 - 2048 IP's - 20.15.16.0/21 → 0 to 8  
 Subnet 3 - 1024 IP's - 20.15.32.0/22 → 0 to 15  
 Subnet 4 - 2048 IP's - 20.15.48.0/21 → 0 to 15  
 Subnet 5 - 1024 IP's - 20.15.64.0/22 → 0 to 15  
 Subnet 6 - 2048 IP's - 20.15.80.0/21 → 0 to 31  
 Subnet 7 - 4096 IP's - 20.15.96.0/20 → 0 to 20

EG9:- VPC9 - 20.15.0.0/16 -

Subnet 1 - 4096 IP's - 20.15.0.0/20 → 20.15.15.255/20  
 Subnet 2 - 16384 IP's - 20.15.16.0/18 → 20.15.63.255/18  
 Subnet 3 - 4096 IP's - 20.15.32.0/20 → 20.15.31.255/20  
 Subnet 4 - 2048 IP's - 20.15.48.0/21 → 20.15.7.255/21  
 Subnet 5 - 1024 IP's - 20.15.64.0/22 → 20.15.3.255/22  
 Subnet 6 - 8192 IP's - 20.15.80.0/19 → 20.15.31.255/19  
 Subnet 7 - 4096 IP's - 20.15.96.0/20 → 20.15.47.255/20  
 140.0

EG110 VPC10 - 20.15.0.0/18

Subnet 1 - 2048 IP's - 20.15.0.0/21 to 20.15.7.255/21

Subnet 2 - 4096 IP's - 20.15.8.0/20 to 20.15.

Subnet 3 - 512 IP's - 20.15.9.0/23

Subnet 4 - 1024 IP's - 20.15.26.0/22

Subnet 5 - 512 IP's - 20.15.30.0/23

Subnet 6 - 4096 IP's - 20.15.32.0/20

Subnet 7 - 1024 IP's - 20.15.48.0/22

Subnet 8 - 2048 IP's - 20.15.52.0/21

EG110 VPC10 - 10.0.0.0/16

Subnet 1 - 4096 IP's - 10.0.0.0/20

Subnet 2 - 2048 IP's - 10.0.0.16.0/22

Subnet 3 - 81.92 IP's - 10.0.0.20.0/19

Subnet 4 - 4096 IP's - 10.0.0.52.0/20

Subnet 5 - 2048 IP's - 10.0.0.68.0/21

Subnet 6 - 4096 IP's - 10.0.76.0/20

~~Day 7~~

### Data Centre

→ A data centre is a facility of one or more buildings that house a centralized computing infrastructure, typically servers, storage & networking equipment.

→ In this world of apps, big data & digital everything, you can't stay on top of your industry without cutting-edge computing infrastructure.

→ If you want to keep things in-house, the answer is the data centre.