CIDR Notations (classless interDomain Routing)

* Ex 1: VPC-1 - 10.0.0.0/22 - 1024 IP Addresses

  Total no. of bits in IPV4 - 32

  Bits in CIDR IP Address - 22

  $32-22 = 10$, $2^{10} = 1024$ ip addresses

* In the CIDR notations "/22" means 22 bits are reserved, likewise /23 means 23 are reserved and so on.

* The no. of bits in ipv4 are 32 bits. So we minus cidr number with ipv4 bit and the result with base 2 is the no. of ipaddress assigning.

  Ex: /32 => $32-22 = 10$

  $2^{10} = 1024$

/22 = 1024	/16 = 65536
/23 = 512	/17 = 32768
/24 = 256	/18 = 16384
/25 = 128	/19 = 8192
/26 = 64	/20 = 4096
/27 = 32	/21 = 2048
/28 = 16	

EG1: VPC1 - 10.0.0.0/24 - 256 IP Addresses

  Total no. of Bits in IPV4 - 32

  Bits in CIDR IP Address - 24

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

  10.0.0.0, 10.0.0.1, - - - - 10.0.0.255

EG 2: VPC 2 - 10.0.0.0/23 - 512 IP Addresses.

  Tot no. of bits in IPV4 - 32

  Bits in CIDR IP addresses - 23

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

  10.0.0.0, 10.0.0.1, 10.0.0.2 - - - 10.0.0.255, 10.0.1.0, 10.0.1.1, 10.0.1.2, - - - - -

  - - - 10.0.1.255.

EG3: VPC 3 - 10.0.0.0/22 — 1024 IP addresses

Tot no. of bits in IPV4 — 32

Bits in CIDR IP address() — 22

$32 - 22 = 10$, $2^{10} = 1024$

10.0.0.0, 10.0.0.1, 10.0.0.2 - - - 10.0.0.255, 10.0.1.0, 10.0.1.1, 10.0.1.2

10.0.1.255, 10.0.2.0, 10.0.2.1 - - - - 10.0.2.255, 10.0.3.0, 10.0.3.1, -
10.0.3.255

Ex: 10.0.0.0/25

Tot bits = 32.

CIDR IP addrs = 25

$32 - 25$, $2^7 = 128$

10.0.0.0, 10.0.0.1, - - - 10.0.0.127

Ex: 10.0.0.0/26

Tot no. of bits = 32

CIDR = 26

$32 - 26 = 2^6 = 64$

10.0.0.0, 10.0.0.1, - - - 10.0.0.63

Ex: 10.0.0.0/27

⟹ 32

10.0.0.0, 10.0.0.1, - - - 10.0.0.31.

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ex: 10.0.0.0/28

⟹ 16

10.0.0.0, 10.0.01 - - - - 10.0.0.15

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ex: 10.0.0.0/16

⟹ $\frac{65536}{256}$: $\frac{2^{16}}{2^8}$ ⟹ 2^8 = 256

(0 - - - 255)

10.0.0.0 : ? 10.0.1.0 - - 10.0.255

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ex: 10.0.0.0/17

10.0.0.0, - - - 10.0.127.255

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ex 10.0.0.0/18

10.0.0.0, - - - 10.0.63.255

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ex: 10.0.0.0/19

10.0.0.0, - - - 10.0.31.255

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ex: 10.0.0.0/20

10.0.0.0, - - - - 10.0.15, 255

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ex: 10.0.0.0/21

10.0.0.0, - - 10.0.7.255

1) VPC 2 - 20.15.0.0/23

Tot no. of bits in IPV4 = 32

Bits in CIDR IP address = 23

$32 - 23 = 9 \Rightarrow 2^9 = 1024 \ 512$

20.15.0.0, 20.15.0.1, 20.15.0.2, - - -

- - - 20.15.0.255, 20.15.1.0, 20.15.1.1 - - - 20.15.1.255

start = 20.15.0.0   end = 20.15.1.255

2) VPC 3 = 20.15.0.0/24

$\Rightarrow$ No. of IP address = 256

20.15.0.0, 20.15.0.1, - - - 20.15.0.255

3) VPC 4 = 20.15.0.0/25

No. of IP addresses = 128

20.15.0.0, 20.15.0.1, - - - 20.15.0.127

4) VPC 5 = 20.15.0.0/26

No. of IP add = 64

20.15.0.0, 20.15.0.0, - - 20.15.0.63

5) VPC 6 = 20.15.0.0/27

No. of IP = 32

20.15.0.0, - - - 20.15.0.31.

6) VPC 7 = 20.15.0.0/28

No. of IP = 16

20.15.0.0 - - - 20.15.0.15

7) VPC 8 = 20.15.0.0/22

No. of IP = 1024.

20.15.0.0, - - 20.15.0.255, 20.15.1.0, - - -

20.15.1.255, 20.15.2.0, - - - 20.15.2.255, - -

20.15.3.0 - - - 20.15.3.255.

8) VPC 9 = 20.15.0.0/21.

No. of IP = 2048

$\Rightarrow$ 20.15.0.0 - - - 20.15.7.255

9) VPC 10 = 20.15.0.0/20

No. of IP = 4096

$\Rightarrow$ 20.15.0.0 - - - 20.15.15.255

10) VPC 11 = 20.15.0.0/19

No. of IP = 8192.

$\Rightarrow$ 20.15.31.255

11) VPC 12 = 20.15.0.0/18

No. of IP = 16384

$\Rightarrow$ 20.15.63.255

12) VPC 13 = 20.15.0.0/17

No. of IP = 32768

$\Rightarrow$ 10.0.127.255

13) VPC 13 = 20.15.0.0/16

No. of IP = 65536

$\Rightarrow$ 10.0.255.255

Ex:1   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
" 3 " " – 20.15.2.0/24
" 4 " " – 20.15.3.0/24

Ex:2   VPC 2 = 20.15.0.0/21

Subnet 1 = 512 ip's – 20.15.0.0/23
" 2 " – 20.15.2.0/23
" 3 " – 20.15.4.0/23
" 4 " – 20.15.6.0/23

ex 3:   VPC 3 = 20.15.0.0/20

Subnet 1 – 1024 ip's – 20.15.0.0/22
" 2 " " – 20.15.4.0/22
" 3 " " – 20.15.8.0/22
" 4 " " – 20.15.12.0/22

ex 4:   VPC 4 = 20.15.0.0/19

Subnet 1 – 2048 ip – 20.15.0.0/21
" 2 " " – 20.15.8.0/21
" 3 " " – 20.15.16.0/21
" 4 " " – 20.5.24.0/21

ex 5   VPC 5 = 20.15.0.0/18

Subnet 1 – 4096 IP's – 20.15.0.0/20
" 2 " " – 20.15.16.0/20
" 3 " " – 20.15.32.0/20
" 4 " " – 20.15.48.0/20

ex 6   VPC 6 = 20.15.0.0/17

Subnet 1 – 8192 ip's – 20.15.0.0/19
" 2 " " – 20.15.32.0/19
" 3 " " – 20.15.64.0/19
" 4 " " – 20.15.96.0/19

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ex7: VPC 7 = 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
" 3 " " – 20.15.128.0/18
" 4 " " – 20.15.192.0/18

ex 8 VPC 8 = 20.15.0.0/23

Subnet 1 – 128 ips – 20.15.0.0/25
" 2 – " " – 20.15.0.128/25
3 " – 20.15.1.0/25
4 " – 20.15.1.128/25

ex 8 VPC 8 – 20.15.0.0/18

Subnet 1 – 4096 IP's – 20.15.0.0/20
Subnet 2 – 2048 ip's – 20.15.16.0/21
" 3 – 1024 ips – 20.15.24.0/22
" 4 – 2048 ips – 20.15.28.0/21
" 5 – 1024 ips – 20.15.36.0/22
" 6 – 2048 ips – 20.15.40.0/21
" 7 – 4096 ip's – 20.15.48.0/20

ex9 VPC 9 – 20.15.0.0/16

Subnet 1 – 4096 ip's – 20.15.0.0/20
Subnet 2 – 16384 ip's – 20.15.16.0/18
Subnet 3 – 4096 ip's – 20.15.80.0/20
Subnet 4 – 2048 ip's – 20.15.96.0/21
Subnet 5 – 1024 ip's – 20.15.104.0/22
Subnet 6 – 8192 ip's – 20.15.108.0/19
Subnet 7 – 4096 ip's – 20.15.148.0/20

ex. 10   VPC 10 — 20.15.0.0/18

Subnet 1 — 2048 IP's — 20.15.0.0/21
Subnet 2 — 4096 IP's — 20.15.8.0/20
Subnet 3 — 512 IP's   — 20.15.24.0/23
"   4 — 1024 IP's — 20.15.26.0/22
"   5 — 512 IP's   — 20.15.30.0/23
"   6 — 4096 IP's — 20.15.32.0/20
"   7 — 1024 IP's — 20.15.48.0/22
"   8 — 2048 IP's — 20.15.52.0/21

ex. 11   VPC-11 — 20.15.0.0/17

Subnet 1 — 2048 IP's — 20.15.0.0/21
"   2 = 8192 IP's — 20.15.8.0/19
"   3 — 2048 IP's — 20.15.40.0/21
"   4 — 1024 IP's — 20.15.48.0/22
"   5 — 512 IP's   — 20.15.52.0/23
"   6 — 4096 IP's — 20.15.54.0/20
"   7 — 512 IP's   — 20.15.70.0/23
"   8 — 2048 IP's — 20.15.72.0/21

ex. 12   VPC-10 — 10.0.0.0/16

Subnet 1 — 4096 IP's — 10.0.0.0/20
Sub 2 — 1024 ~~2048~~ IP's — 10.0.16.0/21
"   3 — 8192 IP's — 10.0.20.0/19
"   4 — 4096 IP's — 10.0.52.0/20
"   5 — 2048 IP's — 10.0.68.0/21
"   6 — 4096 IP's — 10.0.76.0/20