

CIDR NOTATION : (/16 to /28)

Eg1 : VPC1 - 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

$$/16 \rightarrow 32 - 16 = 16 = 2^{16} = 65,536$$

$$/17 \rightarrow 32 - 17 = 15 = 2^{15} = 32,768$$

$$/18 \rightarrow 32 - 18 = 14 = 2^{14} = 16,384$$

$$/19 \rightarrow 32 - 19 = 13 = 2^{13} = 8,192$$

$$/20 \rightarrow 32 - 20 = 12 = 2^{12} = 4,096$$

$$/21 \rightarrow 32 - 21 = 11 = 2^{11} = 2,048$$

$$/22 \rightarrow 32 - 22 = 10 = 2^{10} = 1,024$$

$$/23 \rightarrow 32 - 23 = 9 = 2^9 = 512$$

$$/24 \rightarrow 32 - 24 = 8 = 2^8 = 256$$

$$/25 \rightarrow 32 - 25 = 7 = 2^7 = 128$$

$$/26 \rightarrow 32 - 26 = 6 = 2^6 = 64$$

$$/27 \rightarrow 32 - 27 = 5 = 2^5 = 32$$

$$/28 \rightarrow 32 - 28 = 4 = 2^4 = 16$$

Ex 1

VPC-1 - 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, 10.0.0.2, ..., 10.0.0.255

Ex 2

VPC2 - 10.0.0.0/23 - 512 IP Addresses

Total no of bits in IPV4 - 32

Bits in CIDR IP Address - 23

$32 - 23 = 9, 2^9 = 512$ 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, ..., 10.0.1.255

Ex 3

VPC-3 - 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

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, 10.0.2.2, ..., 10.0.2.255,

10.0.3.0, 10.0.3.1, 10.0.3.2, ..., 10.0.3.255

11
256
256
512
256
768
256
1024

Ex:

VPC-4 - 10.0.0.0/21

$$32-21 = 11$$

$$2^{11} = 2,048$$

$$\frac{1024}{256} = 4$$

$$\frac{2048}{256} = 8$$

256 10.0.0.0, 10.0.0.1, 10.0.0.2, ..., 10.0.0.255
 256 10.0.0.1, 10.0.0.2, ..., 10.0.0.255
 512 10.0.0.1, 10.0.0.2, ..., 10.0.0.255
 256 10.0.0.2, 10.0.0.3, ..., 10.0.0.255
 768 10.0.0.2, 10.0.0.3, ..., 10.0.0.255
 256 10.0.0.3, 10.0.0.4, ..., 10.0.0.255
 1024 10.0.0.3, 10.0.0.4, ..., 10.0.0.255
 256 10.0.0.4, 10.0.0.5, ..., 10.0.0.255
 1280 10.0.0.4, 10.0.0.5, ..., 10.0.0.255
 256 10.0.0.5, 10.0.0.6, ..., 10.0.0.255
 1536 10.0.0.5, 10.0.0.6, ..., 10.0.0.255
 256 10.0.0.6, 10.0.0.7, ..., 10.0.0.255
 1792 10.0.0.6, 10.0.0.7, ..., 10.0.0.255
 256 10.0.0.7, 10.0.0.8, ..., 10.0.0.255
 2048

Ex: VPC-45 → 10.0.0.0/20

$$32-20 = 12$$

$$2^{12} = 4,096$$

$$\frac{4096}{256} = 16$$

2048 10.0.0.0, 10.0.0.1, ..., 10.0.0.255
 256 10.0.0.1, 10.0.0.2, ..., 10.0.0.255
 4096 10.0.0.1, 10.0.0.2, ..., 10.0.0.255
 23 10.0.0.2, 10.0.0.3, ..., 10.0.0.255
 256 10.0.0.3, 10.0.0.4, ..., 10.0.0.255
 1 10.0.0.4, 10.0.0.5, ..., 10.0.0.255
 2560 10.0.0.5, 10.0.0.6, ..., 10.0.0.255
 256 10.0.0.6, 10.0.0.7, ..., 10.0.0.255
 2816 10.0.0.7, 10.0.0.8, ..., 10.0.0.255
 256 10.0.0.8, 10.0.0.9, ..., 10.0.0.255
 1 10.0.0.9, 10.0.0.10, ..., 10.0.0.255
 3072 10.0.0.10, 10.0.0.11, ..., 10.0.0.255
 256 10.0.0.11, 10.0.0.12, ..., 10.0.0.255
 3328 10.0.0.12, 10.0.0.13, ..., 10.0.0.255
 256 10.0.0.13, 10.0.0.14, ..., 10.0.0.255
 3584

$$10.0.15.0 \dots 10.0.15.255$$

$$\textcircled{256}$$

$$n^* 2+1$$

3584
256
3584
256
14096
4x3

$$\text{UPC-6} \rightarrow 10.0.0.0/19 = 8192$$

$$2^{13} = 8,192$$

$$\frac{8192}{256} = 32$$

$$31.255$$

$$10.0.0.0, \dots, 10.0.31.255$$

Ex: 31

$$\text{UPC-7} \rightarrow 10.0.0.0/18$$

$$2^{14} = 16,384$$

$$31^* 2+1$$

$$\frac{31}{\times 2}$$

$$62$$

$$10.0.0.0, \dots, 10.0.63.255$$

Ex: 63

$$\text{UPC-8} \rightarrow 10.0.0.0/17$$

$$2^{15} = 32,768$$

$$\frac{\times 2}{126+1}$$

$$10.0.0.0, \dots, 10.0.127.255$$

Ex: 127

$$\text{UPC-9} \rightarrow 10.0.0.0/16 = 65,536$$

$$10.0.0.0, \dots, 10.0.255.255$$

$$\frac{\times 2}{254+1}$$

Ex: 254

$$\text{UPC-10} \rightarrow 10.0.0.0/28 = 16$$

$$10.0.0.0, \dots, 10.0.0.15$$

$$n(n+1)$$

Ex: 15

$$\text{UPC-11} \rightarrow 10.0.0.0/27 = 32$$

$$10.0.0.0, \dots, 10.0.0.32$$

Ex: UPC-1.2 $\rightarrow 10.0.0.0/26$

10.0.0.0 - - - - - 10.0.0.255

13 $\rightarrow 10.0.0.0/25$

10.0.0.0 - - - - - 10.0.0.128

DAY-6 30-12-24

UPC 2 - 20.15.0.0/23 - 512

20.15.0.0 - - - - - 20.15.1.255

UPC 3 - 20.15.0.0/24 - 256

20.15.0.0 - - - - - 20.15.0.255

UPC 4 - 20.15.0.0/25 - 128

20.15.0.0 - - - - - 20.15.0.128

UPC 5 - 20.15.0.0/26 - 64

20.15.0.0 - - - - - 20.15.0.64

UPC 6 - 20.15.0.0/27 - 32

20.15.0.0 - - - - - 20.15.0.32

UPC 7 - 20.15.0.0/28 - 16

20.15.0.0 - - - - - 20.15.0.16

$$\begin{aligned} \text{VPC 8} &- 20 \cdot 15 \cdot 0 \cdot 0 / 22 - \frac{1024}{256} 4 \\ &20 \cdot 15 \cdot 3 \cdot 0 \cdot \dots \cdot 20 \cdot 15 \cdot 3 \cdot 255 \\ \text{VPC 9} &- 20 \cdot 15 \cdot 0 \cdot 0 / 21 \rightarrow \frac{2048}{256} 6 \\ &20 \cdot 15 \cdot 7 \cdot 0 \cdot \dots \cdot 20 \cdot 15 \cdot 7 \cdot 255 \end{aligned}$$

$$\begin{aligned} \text{VPC 10} &- 20 \cdot 15 \cdot 0 \cdot 0 / 20 = \frac{4096}{256} 16 \\ &20 \cdot 15 \cdot 15 \cdot 0 \cdot \dots \cdot 20 \cdot 15 \cdot 15 \cdot 255 \end{aligned}$$

$$\begin{aligned} \text{VPC 11} &\rightarrow 20 \cdot 15 \cdot 0 \cdot 0 / 19 - \frac{8192}{256} 32 \\ &20 \cdot 15 \cdot 31 \cdot 0 \cdot \dots \cdot 20 \cdot 15 \cdot 31 \cdot 255 \end{aligned}$$

$$\begin{aligned} \text{VPC 12} &\rightarrow 20 \cdot 15 \cdot 0 \cdot 0 / 18 - \frac{16384}{256} 64 \\ &20 \cdot 15 \cdot 63 \cdot 0 \cdot \dots \cdot 20 \cdot 15 \cdot 63 \cdot 255 \end{aligned}$$

$$\begin{aligned} \text{VPC 13} &\rightarrow 20 \cdot 15 \cdot 0 \cdot 0 / 17 - \frac{32768}{256} 128 \\ &20 \cdot 15 \cdot 127 \cdot 0 \cdot \dots \cdot 20 \cdot 15 \cdot 127 \cdot 255 \end{aligned}$$

$$\begin{aligned} \text{VPC 14} &\rightarrow 20 \cdot 15 \cdot 0 \cdot 0 / 16 - \frac{65536}{256} 256 \\ &20 \cdot 15 \cdot 255 \cdot 0 \cdot \dots \cdot 20 \cdot 15 \cdot 255 \cdot 255 \end{aligned}$$

Subnet:

Eg 1:

VPC1 - 20.15.0.0/22 -

Subnet1 - 256 IP's - 20.15.0.0/24

Subnet2 - 256 IP's - 20.15.1.0/24

Subnet3 - 256 IP's - 20.15.2.0/24

Subnet4 - 256 IP's - 20.15.3.0/24

Eg 2: VPC2 - 20.15.0.0/21 -

Subnet1 - 512 IP's - 20.15.0/23

- 20.15.2/23

- 20.15.4/23

- 20.15.6/23

Eg 3: VPC3 - 20.15.0.0/20

Subnet1 - 1024 IP's - 20.15.0/22

- 20.15.0.4/22

- 20.15.0.8/22

- 20.15.0.12/22

~~20.15.0.16/22~~

Eg: VPC-4 - 20.15.0.0/19

Subnet 1 - 2048 IP's - 20.15.0.0/21

- 20.15.0.0/21

- 20.15.16.0/21

- 20.15.32.0/21

7
7
14
15
17
22

Eg: VPC 5 - 20.15.0.0/18

Subnet 1 - 4096 IP's - 20.15.0.0/20

- 20.15.0.0/20

20.15.16.0/20

20.15.32.0/20

20.15.48.0/20

31
15
46

Eg: VPC 6 - 20.15.0.0/17

Subnet 1 - 8192 IP's - 20.15.0.0/19

20.15.0.0/19

63.0/19

95.0

31
31
62
63
31
94

Eg: VPC-7 - 20.15.0.0/18

Subnet 1 - 4096 IP's - 20.15.0.0/16

2048

1024

2048

1024

2048

4096

- 20.15.23.0/16

- 20.15.27.0/16

35

39

47

63

15
27
7
17
22
23
3
39
18
7
47
16
63