

NETWORKING NOTES:

- The network ID cannot start with 127 because 127 belongs to the loop back functions
- All bits of network ID set to 0 are used to denote a specific host on the local network and are not routed and therefore, assigned

Summary of classful addressing:-

3. CIDR Notation:-

VPC1 - 10.0.0.0/22 - 1024 IP addresses

Total number of BITS in IPV4 - 32

BITS in CIDR IP ADDRESS - 22

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

VPC2 - 10.0.0.0/23 - 512 IP addresses

Total number of BITS in IPV4 - 32

$32 - 23 = 9$, $2^9 = 512$ IP addresses

$32 - 24 = 8$, $2^8 = 256$ IP addresses

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

$32 - 26 = 6$, $2^6 = 64$ IP addresses

$32 - 27 = 5$, $2^5 = 32$ IP addresses

$32 - 28 = 4$, $2^4 = 16$ IP addresses

$32 - 29 = 3$, $2^3 = 8$ IP addresses

$32 - 30 = 2$, $2^2 = 4$ IP addresses

$32 - 31 = 1$, $2^1 = 2$ IP addresses

$32 - 32 = 0$, $2^0 = 1$ IP address

$32 - 33 = -1$, $2^{-1} = 0.5$ IP addresses

EG1: VPC1 - 10.0.0.0/24 - 256 IP addresses

Total number 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,

EG2: VPC2 - 10.0.0.0/23 - 512 IP addresses

Total number of BITS in IPV4 - 32

BITS in CIDR IP ADDRESS - 23

$32 - 23 = 9$, $2^9 = 512$ IP addresses

1/2 VPC3 - 10.0.0.0/22 - 1024 IP addresses

$2^{10} = 10$ are for hosting.

10.0.0.0, ——— 10.0.0.255 — 256

10.0.1.0, - - - - 10.0.1.255 - 256

10.0.20 - - 10.02.255 - 252
10.03.255 - 257

10.0.3.0 - - - 10.0.3.255 - 256

Sub 4 - VPC 4 - 10.0.0.0/25 -

2. ② ③ are for hosting

$$2^7 = 128$$

10.0.0.0 — — 10.0.0.128

VP05 - 100.00/96 -

$2^{16} = 65,536$ in addresses

10.0.0.0/20 -

212-4091

10.000 - - 10.00.

VPC 10-10.0.0.0/19 - 8192

10.0.0.0 - - - 10.0.0.255

10.031.0 - - - 10.0.31.25T

IPC 11 - 10.0.0.0/18 - 16384

10.000 - - - 10.000.255

10.0.0.0 -
10.0.63.0 - - 10.0.63.255

VPC 13-10.0.0.16 - 65536

10.0.0.0 ——— 10.0.0.255

$$10 - 0.255 \cdot 0 \quad \sim \quad 10 - 0.255 \cdot 255$$
$$V_{PC2} = 20.15.0.0/23 = \frac{512}{256} = 20.15.0.0 - 20.15.0.255$$

20.15. 0.0

20.15.0.25

20. 15. 1, 2

$$VPC\ 3 - 20.15.0.0 / 24 - \frac{255}{255} = 20.15.0.0 - - - 20.15.0.255$$
 $20.15 \cdot 0.25^5$

20.15.0.127

Vpc 4 - 20.15.0.0/25 - 128 = 20.15.0.0 - 20.15.0.127

20.13 0.1
1.215 0.63

2015 0.05

$$V_{PC5} = 20.15 \cdot 0.0126 = 0.254$$

20.15.0.31

0.15, 0.15

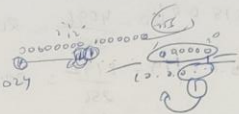
$$V_{PC} = 20.15 \cdot 0.0124 = 0.25 \quad = 20.15 \cdot 0.0128 = 0.26$$

0.15. 0.15

$$V_{PC\ 8} = 20.15 \cdot 0.029 = \frac{5}{1024} = 20.15 \cdot 0.0 = 20.15 \cdot 0.255$$

15.0.255

5.4.255



$VPC 9 - 20.15.0.0 / 81 - \frac{2048}{256} = 20.15.0.0 - 20.15.7.255$
 $VPC 10 - 20.15.0.0 / 60 - \frac{4096}{256} = 20.15.0.0 - 20.15.15.255$
 $VPC 11 - 20.15.0.0 / 19 - \frac{8192}{256} = 20.15.0.0 - 20.15.31.255$
 $VPC 12 - 20.15.0.0 / 18 - \frac{16384}{256} = 20.15.0.0 - 20.15.55.255$

E61 - VPC 1 - 20.15.0.0 / 24 -
 Subnet 1 - 256 IPs - 20.15.0.0 / 24
 Subnet 2 - 256 IPs - 20.15.1.0 / 24
 Subnet 3 - 256 IPs - 20.15.2.0 / 24
 Subnet 4 - 256 IPs - 20.15.3.0 / 24

E62 - VPC 2 - 20.15.0.0 / 21
 Subnet 1 - 512 IPs - 20.15.0.0 / 23
 Subnet 2 - 512 IP address - 20.15.2.0 / 23
 Subnet 3 - 512 address - 20.15.4.0 / 23
 Subnet 4 - 512 IP address - 20.15.6.0 / 23

E63 - VPC 3 - 20.15.0.0 / 20 - 4096
 Subnet 1 - 1024 IP - 20.15.0.0 / 22
 Subnet 2 - 1024 IP - 20.15.4.0 / 22
 Subnet 3 - 1024 IP - 20.15.8.0 / 22
 Subnet 4 - 1024 IP - 20.15.12.0 / 22

E64 - VPC 4 - 20.15.0.0 / 19 - 8192
 Subnet 1 - ~~2048~~ 4096 IP - 20.15.0.0 / 21
 Subnet 2 - 2048 IP - 20.15.8.255 / 21
 Subnet 3 - 2048 IP - 20.15.16.255 / 21
 Subnet 4 - 2048 IP - 20.15.24.255 / 21

E65 - VPC 5 - 20.15.0.0 / 18 - 16384
 Subnet 1 - 4096 - 20.15.0.0 / 20
 Subnet 2 - 4096 - 20.15.8.0 / 20
 Subnet 3 - 4096 - 20.15.16.0 / 20
 Subnet 4 - 4096 - 20.15.24.0 / 20

E66: VPC6 - 20.15.0.0/19 -

Subnet 1 - 8192 IP address - 20.15.0.0/19

Subnet 2 - 8192 IP address - 20.15.32.0/19

Subnet 3 - 8192 IP address - 20.15.64.0/19

Subnet 4 - 8192 IP address - 20.15.96.0/19

E67: 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

E68: VPC8 - 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

Subnet 3 - 1024 IP's - 20.15.24.0/22

Subnet 4 - 2048 IP's - 20.15.28.0/21

Subnet 5 - 1024 IP's - 20.15.36.0/22

Subnet 6 - 2048 IP's - 20.15.40.0/21

Subnet 7 - 4096 IP's - 20.15.48.0/20

E69: VPC9 - 20.15.0.0/18 -

Subnet 1 - 4096 IP's - 20.15.0.0/20

Subnet 2 - 16384 IP's - 20.15.64.0/18

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 - 20.15.104.0/19

Subnet 7 - 4096 IP's - 20.15.140.0/20

E70: VPC10 - 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

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

16 bits

8

4

0.0.0.0

0.0.0.0

0.0.0.0

6670:- $10 \times 10 - 100.0.0/16$ - 65,536 - 10.0.0.0/20
 Subnet 1 - 4096 ip address - 10.0.16.0/21
 Subnet 2 - 4096 IP's - 10.0.20.0/21
 Subnet 3 - 4096 IP's - 10.0.52.0/20
 Subnet 4 - 4096 ip address - 10.0.68.0/21
 Subnet 5 - 2048 ip address - 10.0.76.0/20
 Subnet 6 - 4096 ip address

Data centre:-

- A data center 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 center.
- Its primary role is to support all the critical business applications and workloads that all organizations use to run their business.

Role of a data center:-

A datacenter is designed to handle high volumes of data & traffic with minimum latency, which makes it particularly useful for the following use cases:

- Private cloud: hosting in-house business productivity applications such as CRM, ERP, etc.
- processing big data, Powering machine learning & artificial intelligence
- High-volume e-commerce transactions.
- powering online gaming platforms & communities,
- data storage, backup, recovery & management.