Agenda.

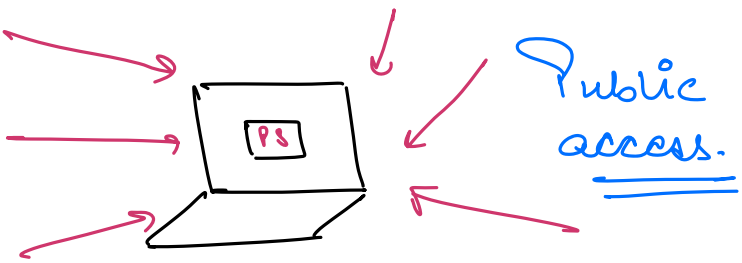
- → Why Cloud ?
- → Deployment
- → IP Addresses.
  - → Static IP's
  - → Public IP's
  - → Private IP's
  - → IPV4 (vs) IPV6.
- → Managed Infra
- → EC2.

Why Cloud ?

ProductService ⇒ localhost : 8080 / products / 1

UserService. local m/c.

Till now the app" that we have created is only accessible from our local machine.



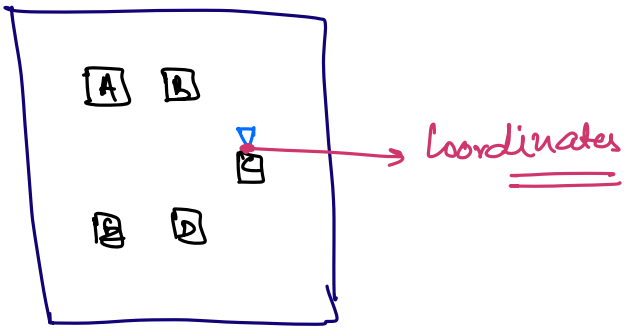
⇒ IP Address.

C602, ——
Near Big Tree.
122101

⇒ Ambigous.
It's very difficult to locate this address.

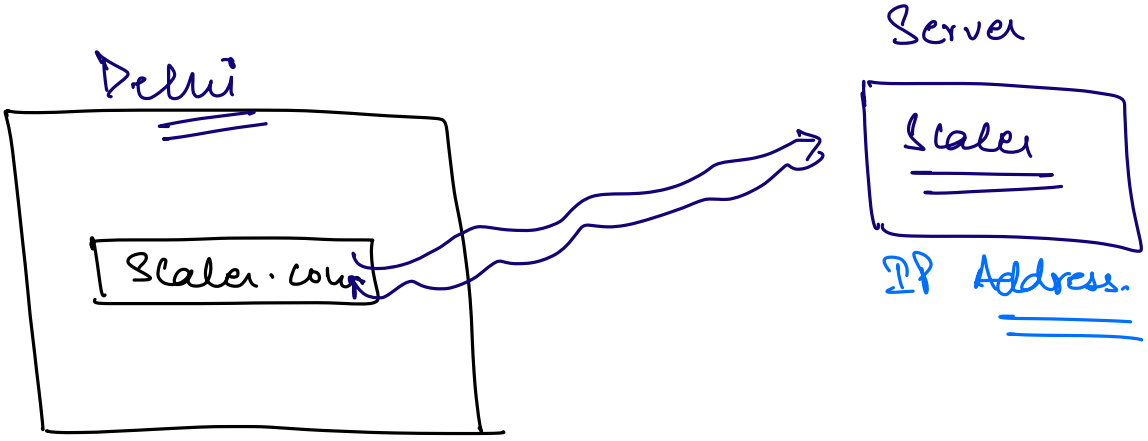
Swiggy | Zomato

numbers.



latitude & longitude.

⇒ No ambiguity



IP Address : Address of a m/c connected to the internet.

⇒ No 2 m/c connected over the n/w can have same IP address.

⇒ 192.68.1.1
25.4.1.3
} ⇒ A.B.C.D. IPV4

A, B, C, D ∈ [0, 255]

2^8

32 bit-

Range ∈ 2^{32}

0.0.0.0
to
255.255.255.255

⇒ 4B

⇒ 4×10^9.

# of devices on internet >>> 4B

⇒ IPV6. : 128 bit.

⇒ 2^{128} Huge no.

⇒ 4B × 4B × 4B × 4B

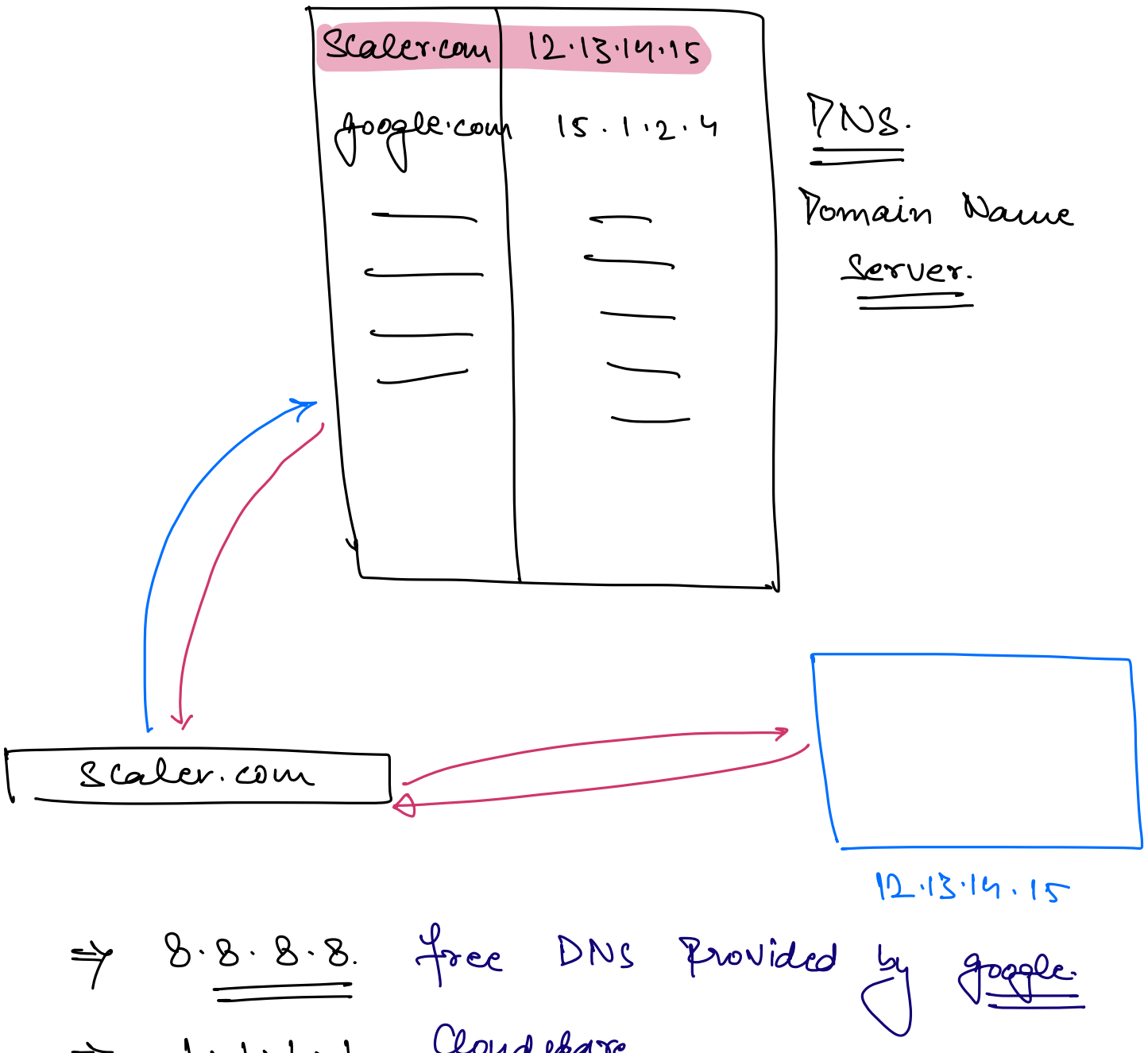
= 64×10^{36}

⇒ IPV4.

⇒ Subnetting

Mohsin → ——————

Akshay → ——————

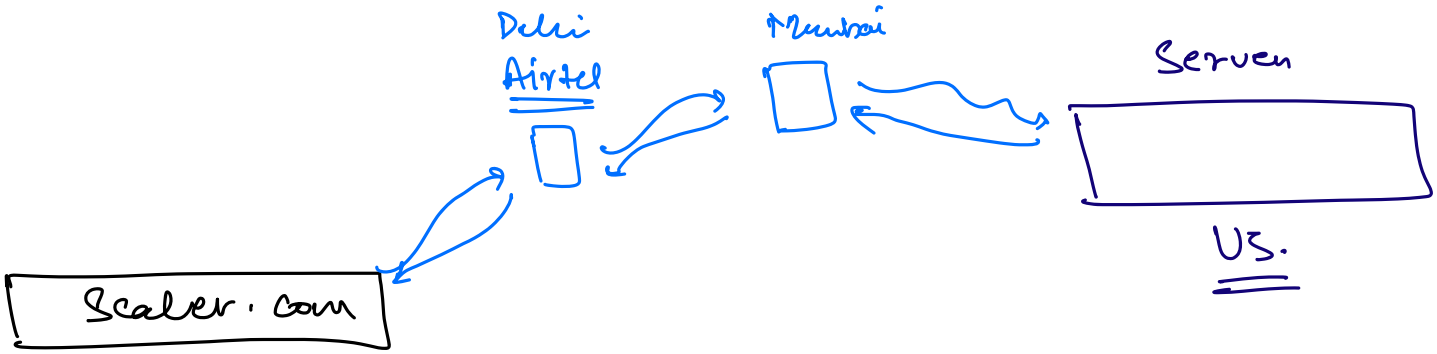


⇒ 8.8.8.8. Free DNS Provided by google.

⇒ 1.1.1.1 Cloudflare

Subnetting

Internet : Network of Network.



⇒ IP addresses are limited

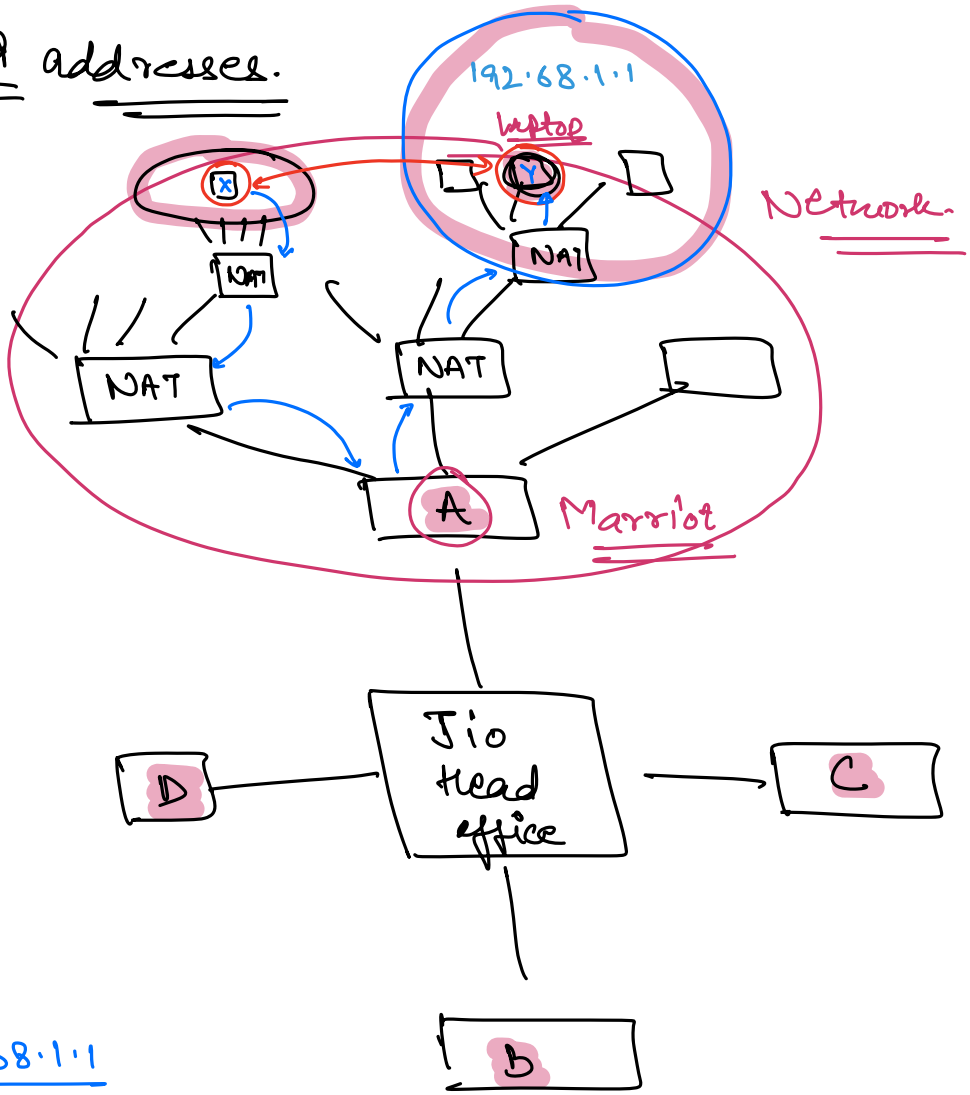
⇒ ICANN. : Manages Internet.

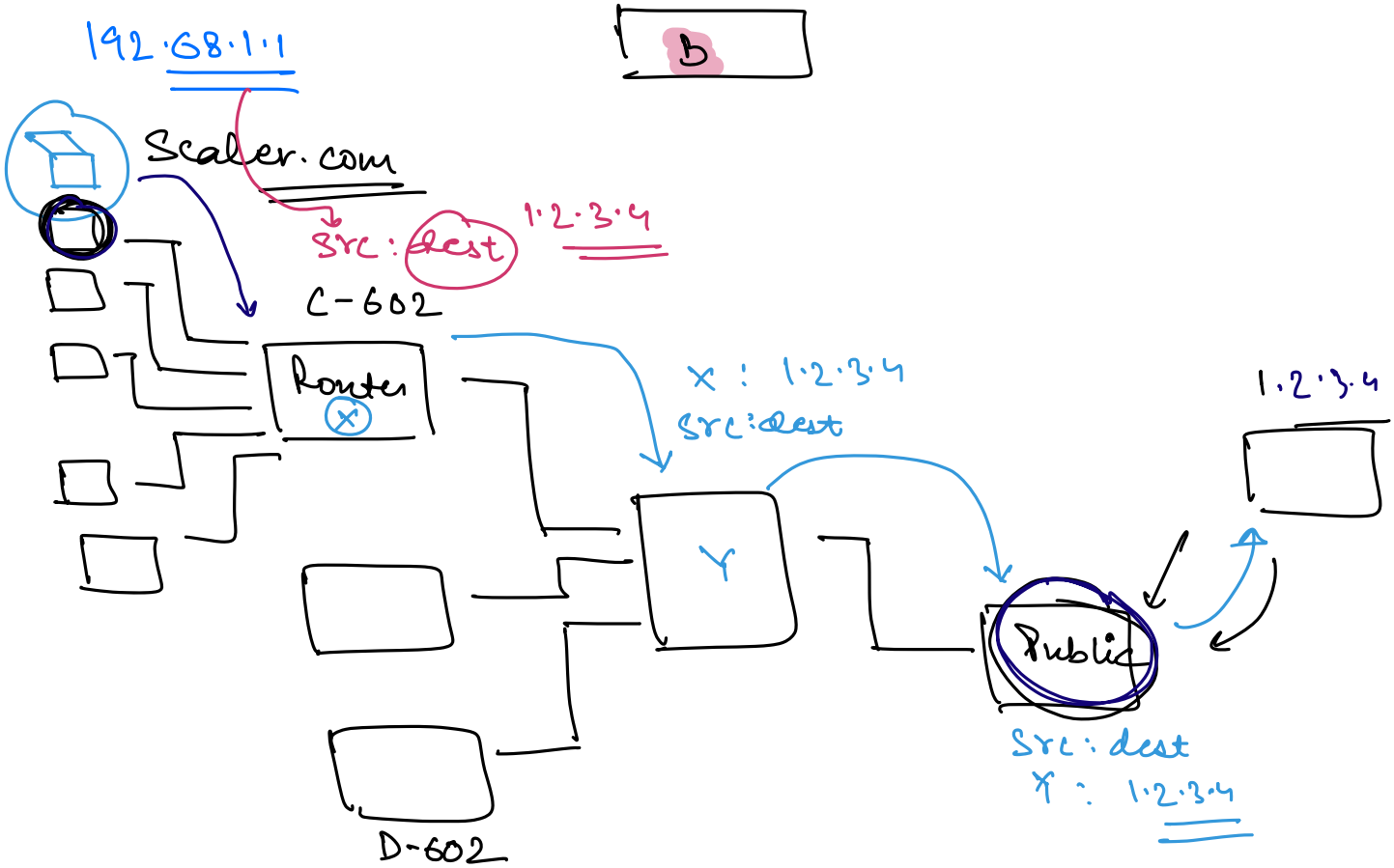
Auction

Public IP's { 1.1.0.0 to 1.1.255.255 } 2^{16}

⇒ Jio.

4 IP addresses.





⇒ SubNetting

↳ Creating n/w inside n/w.

⇒ If we are sitting behind a NAT, we'll get a private IP address.

⇒ How browsers will be able to connect with my m/c. ?

⇒ Public IP.

Buy from your ISP.

⇒ Static.

⇒ 110 ⇒ 10000 IP

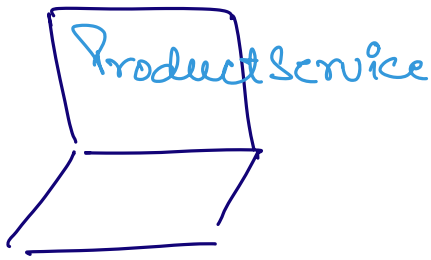
- 6K ⇒ Use
- 4K ⇒ Reserve

⇒ Public + Static

⇒ 1.2.3.4

Static

⇒ Public + Static



Challenges.

- → Electricity
- → Network Congestion
- → Internet disconnected
- → Scaling
- → Geographically diversified.

⇒ We can host our service on our own but it will be very difficult operationally.

⇒ Cloud Service Providers

- → AWS
- → Google Cloud
- → Microsoft Azure

Managed Infra.

⇒ Databases

- Sharding
- Replicas
- Backups.
- Availability
- Version upgrades

⇒ Kafka | Redis | ElasticSearch - - - - - -

⇒ Cloud Providers provides managed infra.

RDS Relational Database Service

↓

Everything we just have to configure, and it will taken care by Cloud provider.

⇒ We can get m/c on loan from Cloud Providers

rent.

Scaler.com ⇒ AWS.

9PM – 12PM
7AM – 10AM
} 100 servers
↓
6 hrs.

for rest 18 hrs ⇒ 10 servers

⇒ Cost optimization

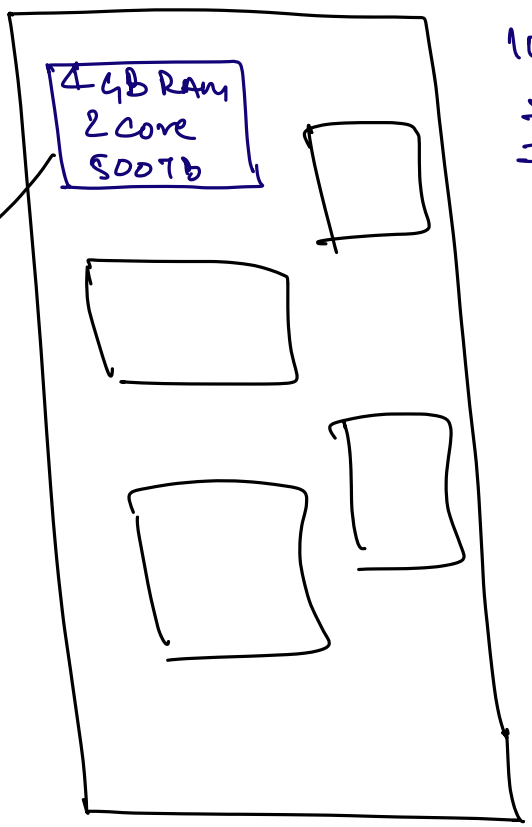
⇒ x$ / hr.

⇒ 4GB Ram
2 core CPU.
500TB HDD.

1000GB RAM
1000 Cores
HDD.

Virtual M/c

10$ / hr



⇒ Auto Scaling

CPU Utilization < 30
↓
- Remove a m/c

CPU Utilization > 70
- Add a new m/c

⇒ EC2 : Elastic Compute Cloud.

↳ Core of AWS.

⇒ Every other service of AWS is mostly going to use EC2 instance.

Server | m/c.

⇒ Managed infra.