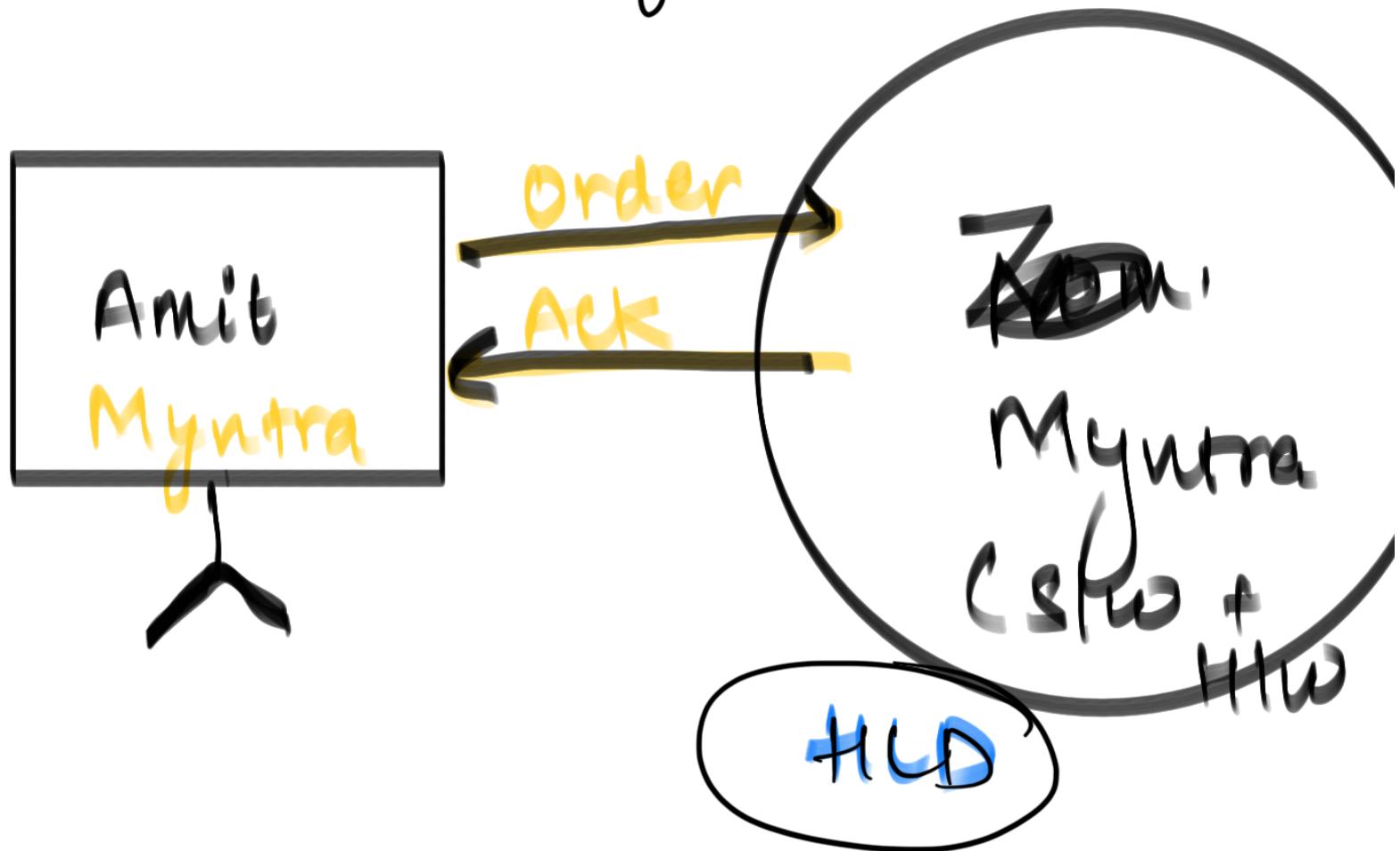


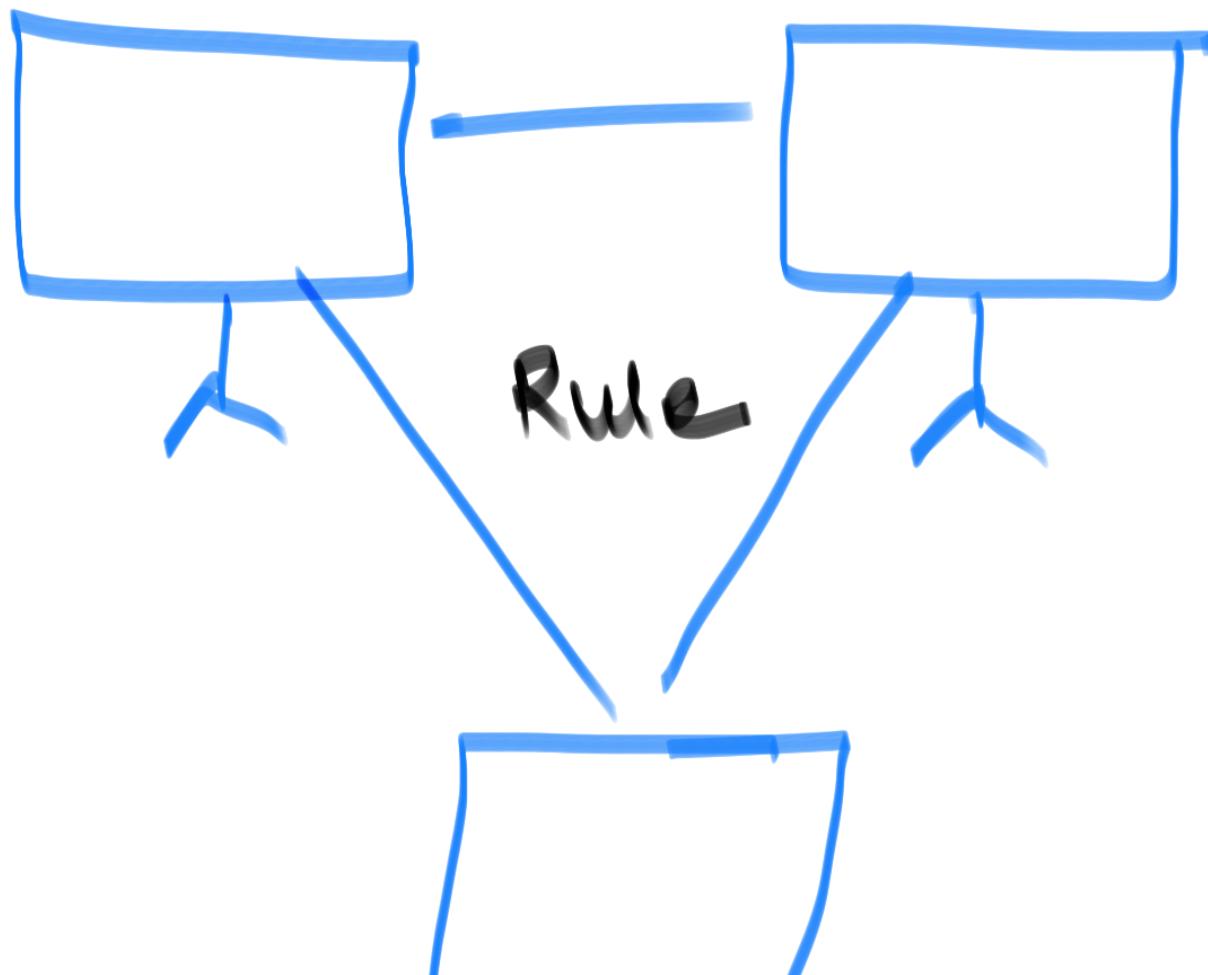
6 Aug 2025 : HLD

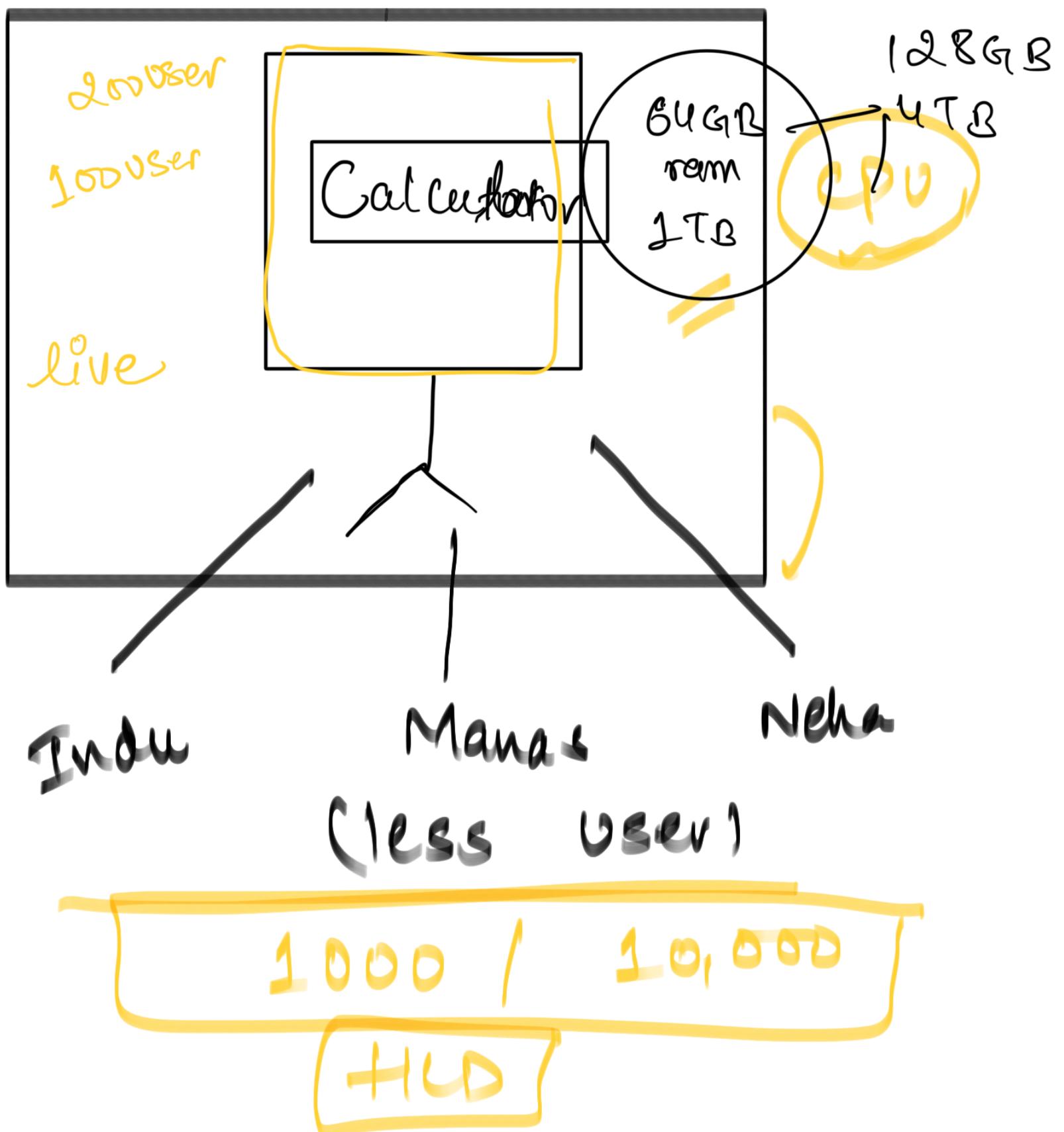
HLD

Architecture of HLD we use



Internet

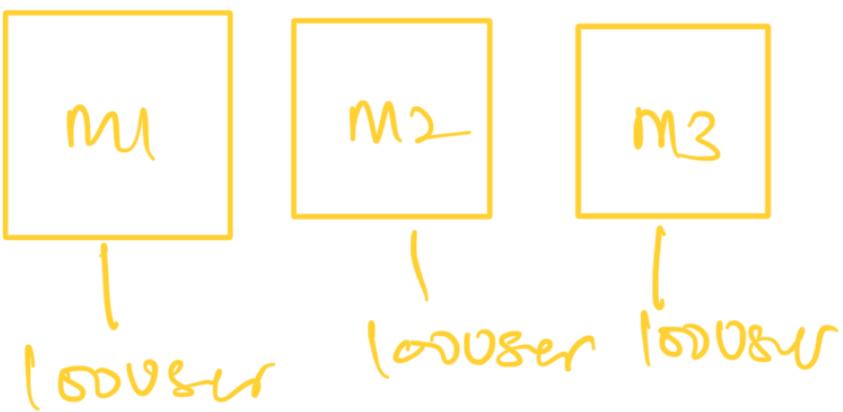




Scaling

Horizontal

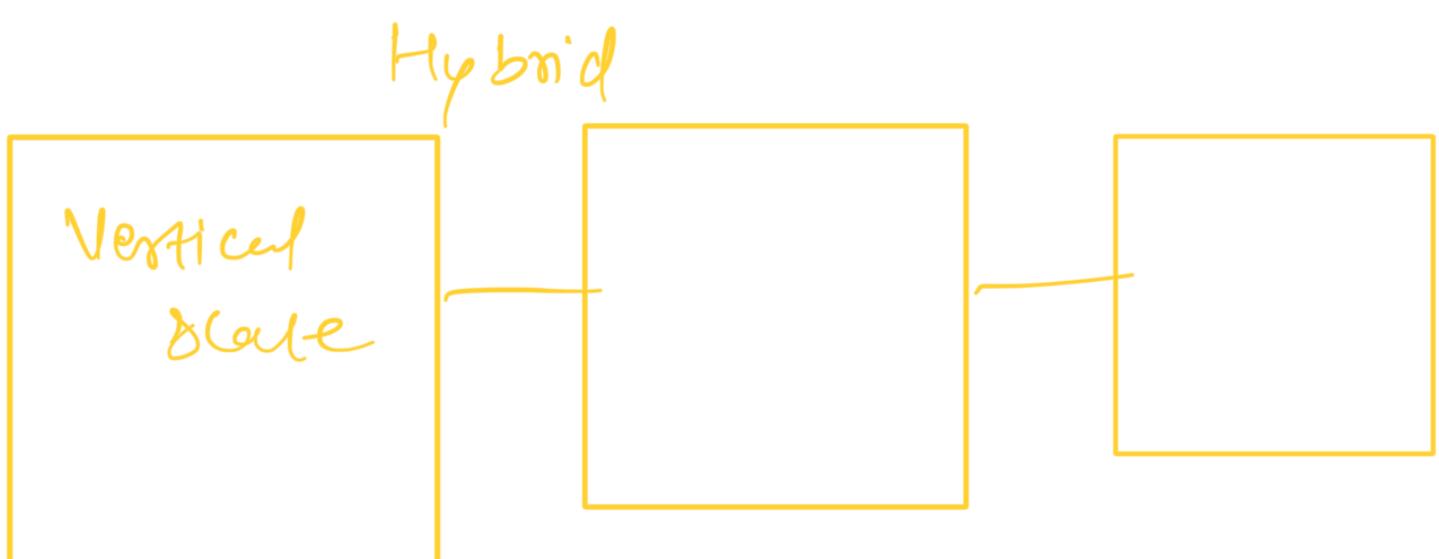
Vertical



Increase No. of
Machines to
fulfil requests.

Add More
Computational
Capacity to
Same Machine

Better



Calculator

1. Availability
 2. Reliability
 3. Scalability ✓
 4. Maintainability

①

Availability

200 days

X

employee $\xleftarrow{1 \text{ week}}$ Manager

8W

Cleave / Down Time)

② Time for which a service is ~~not~~ Accessible to clients.

→ SIunit → Nine (No. of nine)

90%

99.99% (unine)

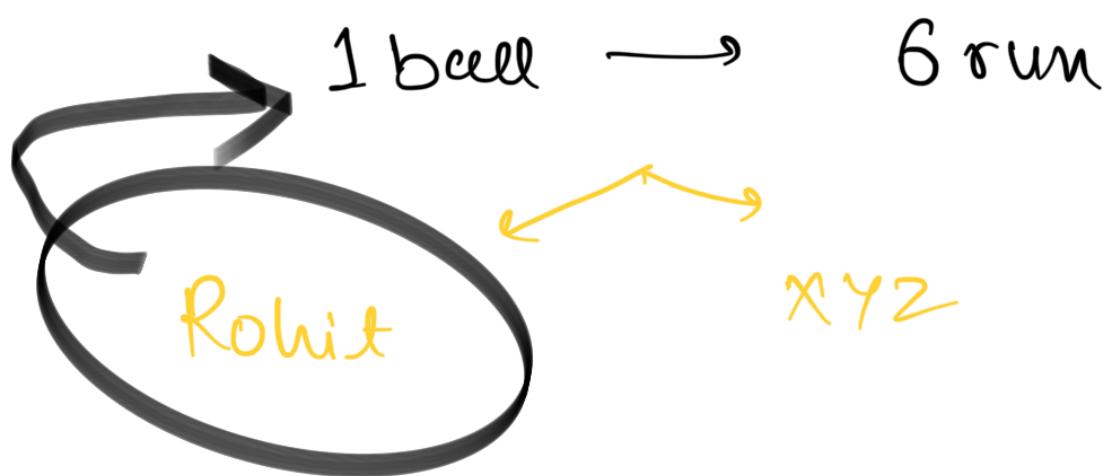
99.999% (5 nine)

90%

99.99% (A nine)



④ Reliability



Service will perform its function
as specified in given time.

→ Consistent Service
per form .

(A)

Maintainability

→ Bug → (less time to fix)
→ Time when Service will
restore its function .

C orient
@

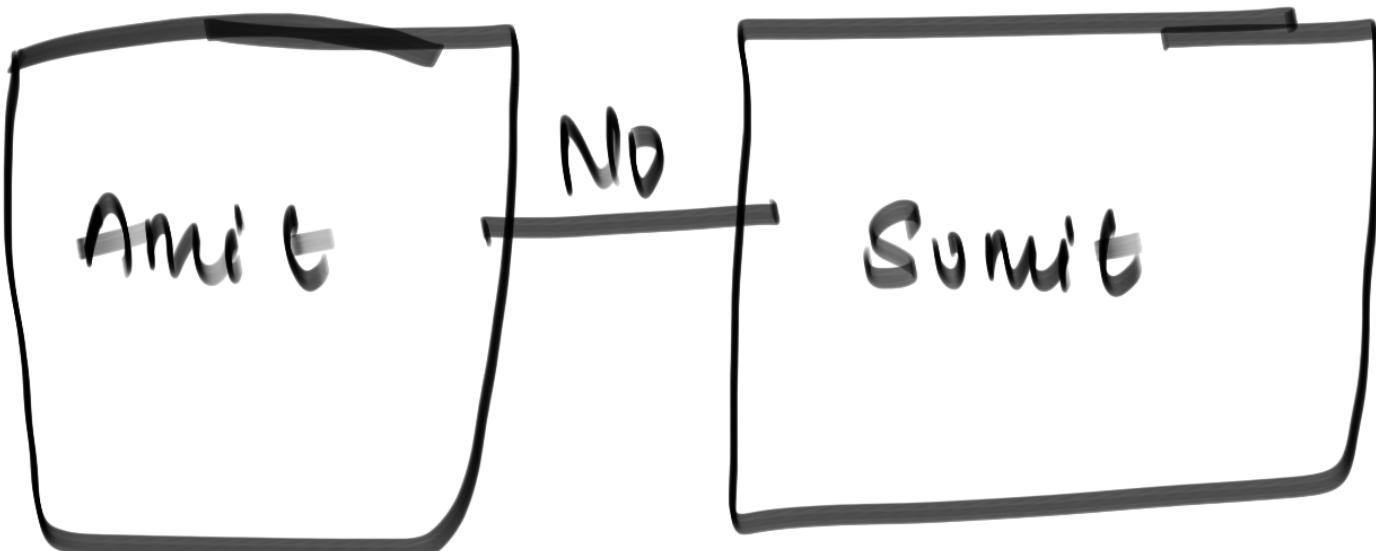
Scale

World Cup Ticket 10 AM



to (cancel)

Consistency (Same)



CAP Theorem

Consistency

Availability

Partition

Notebook Server

Tolerance

Consis → All nodes should have exactly same data

Availability : → Responsive (100% UP)

Partition Tolerance :



This bad scenario will never happen

Ankit : Reminder System

ABCD → 8802278833

Ankit

7th Aug

5 AM



Preetkiran

Done Later ..

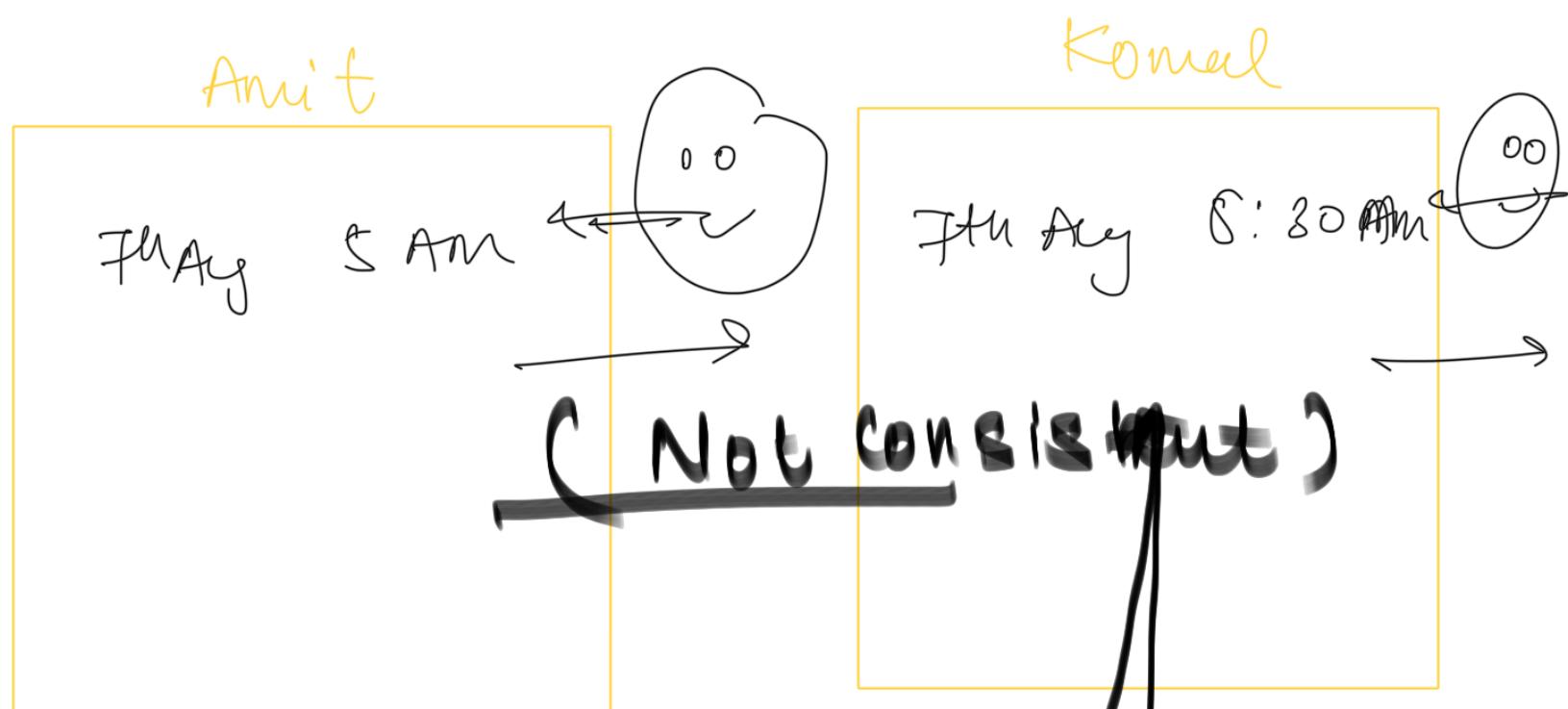


Becomes popular

7th	5 AM
7th	5:30 AM
7th	6 AM

Indra
(Busy) :)

Pratik



Problem

Amit

Komal

P: 7th Aug S: Am P: 7th Aug S: off

I: 7th Aug S: 3pm Ind: T : S: 3pm

~~Fault Tolerance~~
~~Parity~~ 1000 1000

Anurit

P: Th

S: Am

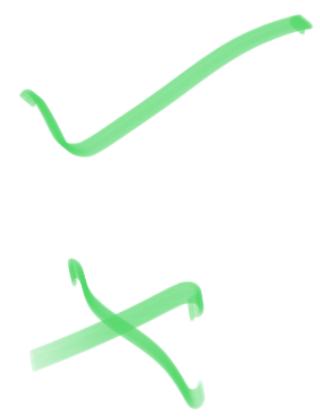
OFF

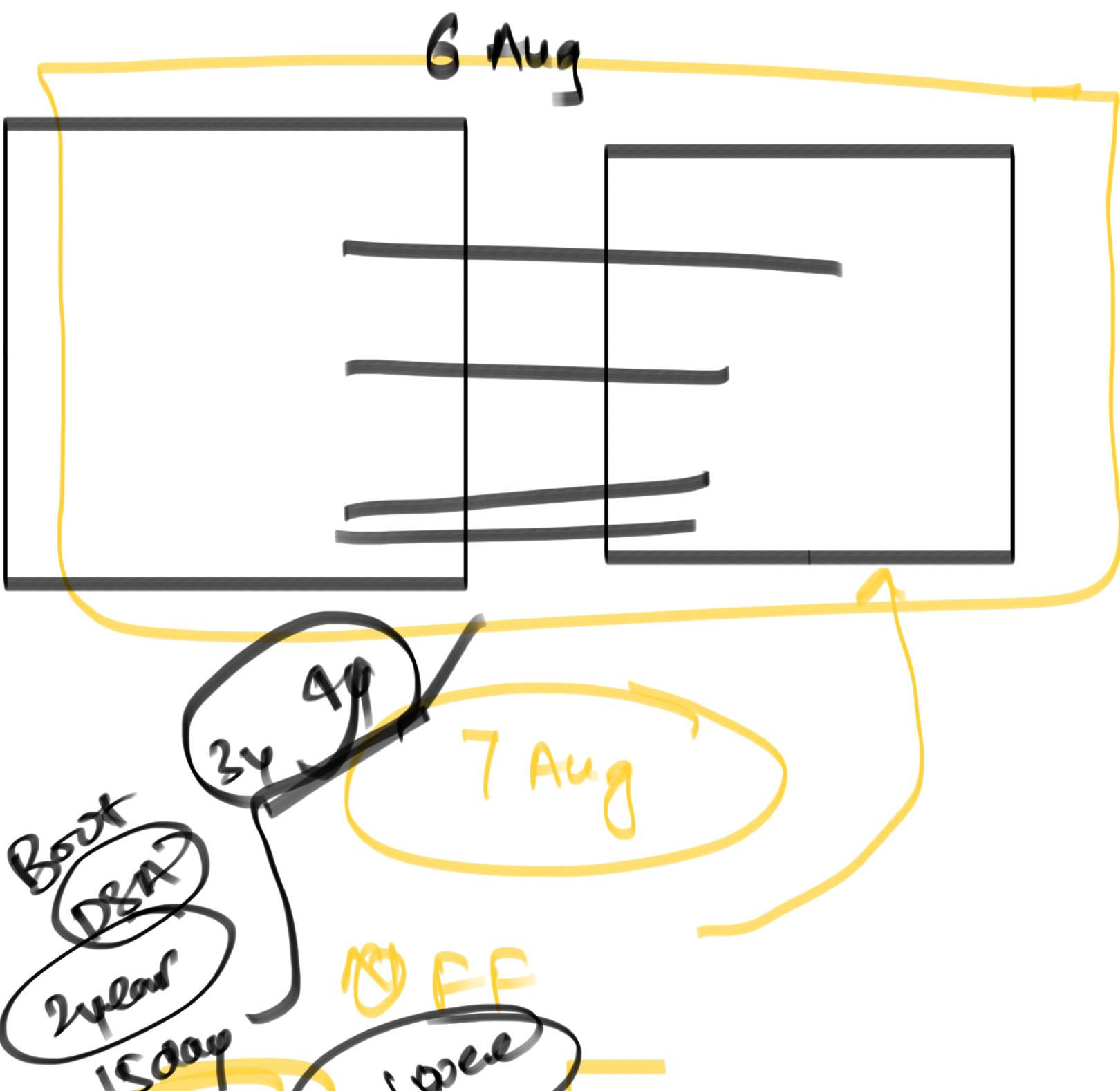
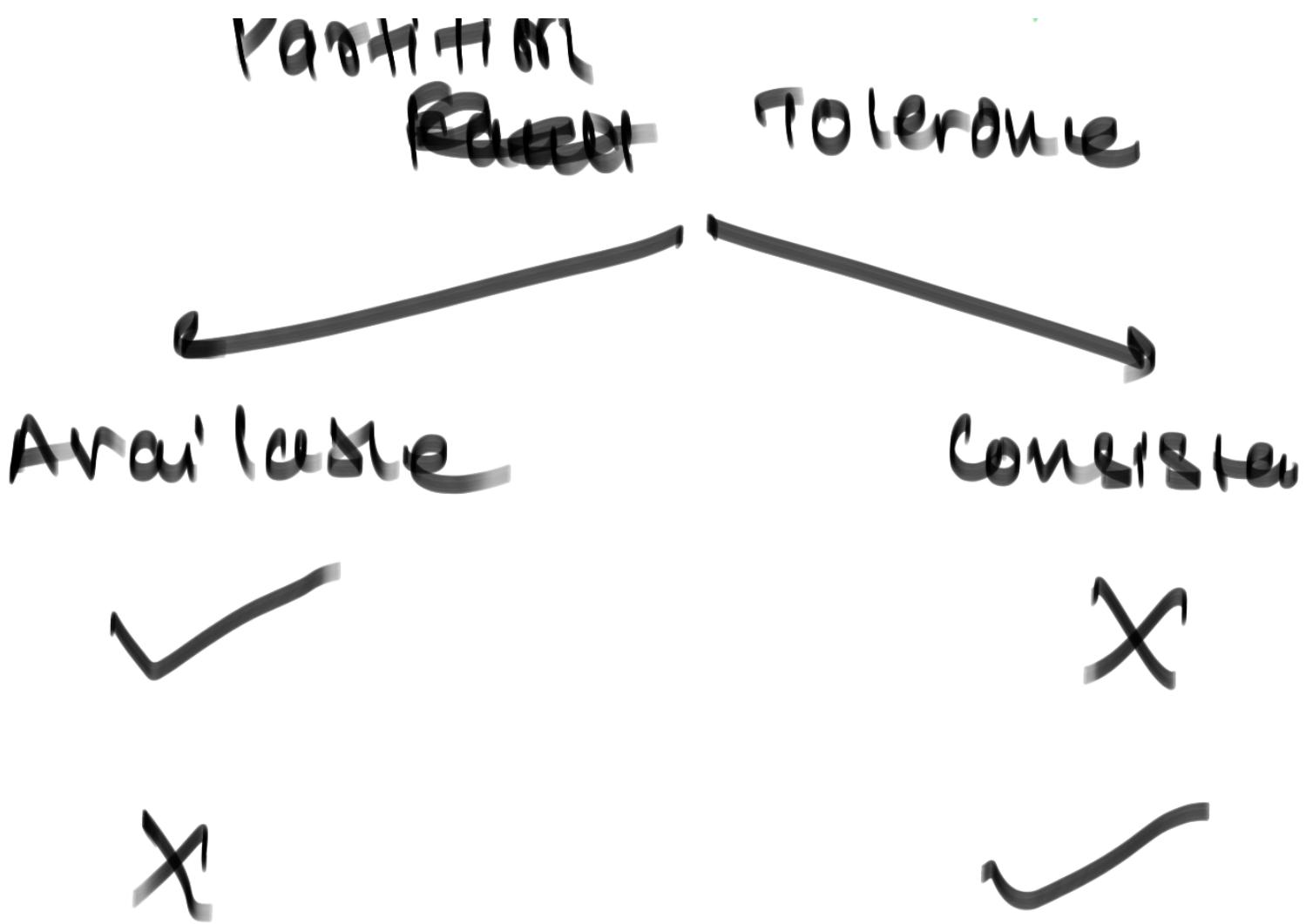
Komal

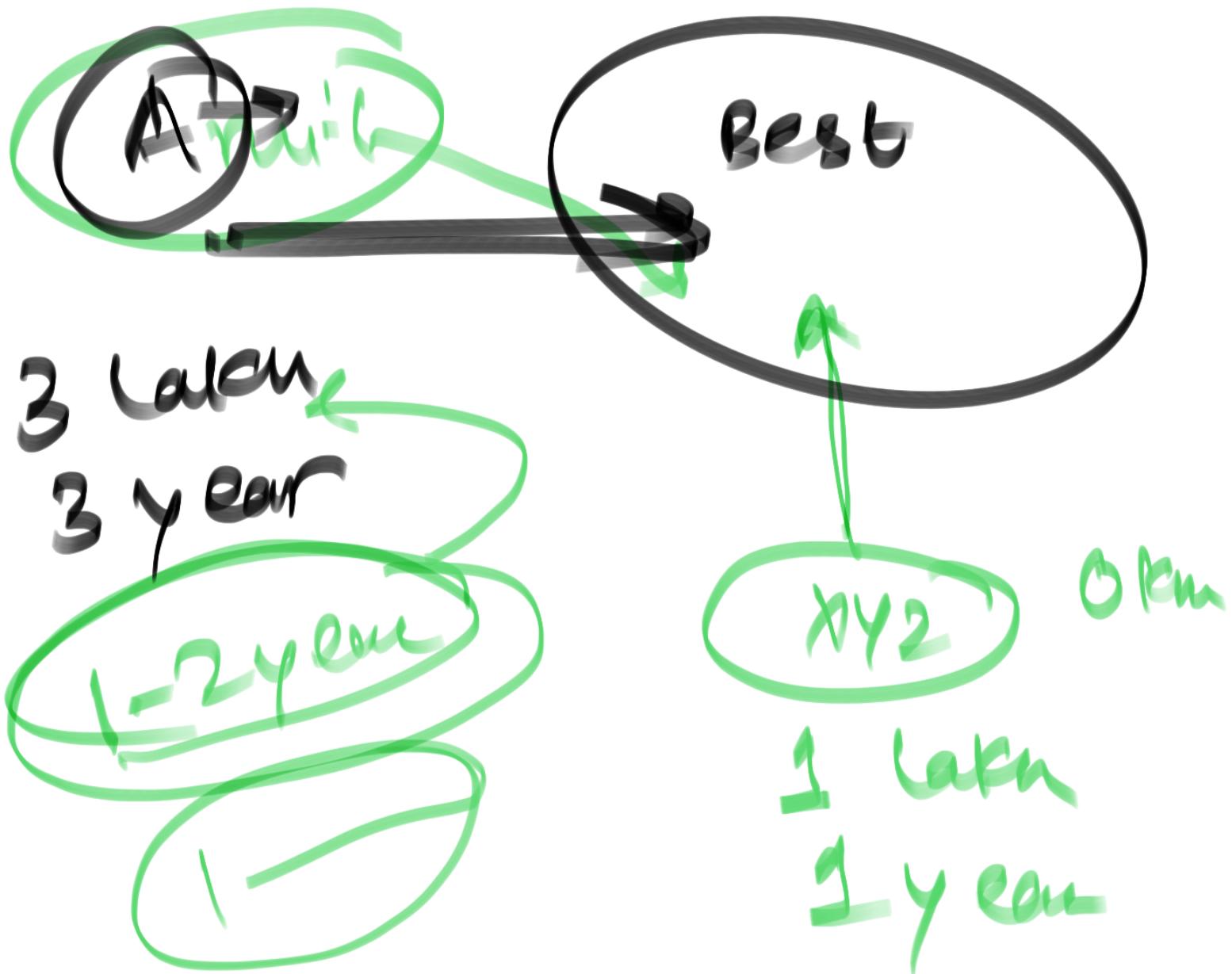
I: T S: 3pm

Consistent

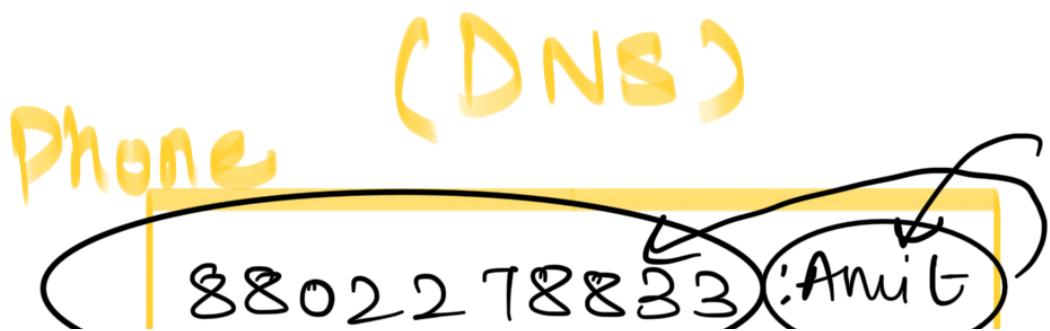
Avalure







Domain Name Service



9811805822 : XYZ

7053498070 : ABC

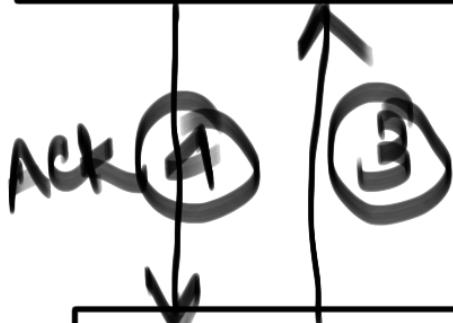
→ local

IP Address: 104.18.2.119



Google

30%



DNS

①
www.google.com





DNS → Naming service which maps human friendly domain names to IP Address

⇒ DNS is 1st point of contact next to every request

Latency (lag) → low latency

