

AM 14th March

Friday, March 15, 2024 7:38 PM

## FUNCTIONAL REQUIREMENTS

1. Upload photos
2. Delete / review photos
3. Follow user
4. News feed

## NON FUNCTIONAL REQUIREMENTS

1. Low latency
2. Availability but are ultimate consistency
3. Scalability
4. Reliability
5. Extensibility
6. Read heavy
7. Efficient storage

### CAPACITY ESTIMATION:

500M users in total  
1M active users per day

Traffic:

Wastes

$$1M \times 2 \text{ photos} = 2M \text{ photos/day}$$

$$\frac{2 \text{ ms}}{24 \text{ hr} \times 60 \text{ min} \times 60 \text{ sec}} = \frac{2 \times 10^6}{3600 \times 24} = 23 \text{ photos/sec}$$

made: water  
10:1



$$20 \text{ photos} \times 11.5 = 230 \text{ photos/sec}$$

Storage : 500 kb / photo

long time ! 10 years

Writes:  $2M \text{ photos/day} \times 500 \text{ Kb} = 1000 \times 10^6 \times 10^3$   
 $= 1TB \text{ per day}$

$$1 \text{ TB} \times 10 \text{ years} \times 365 \text{ days} = 3650 \text{ TB}$$

## BANDWIDTH!

Reads (outgoing)

$$230 \text{ photos/sec} \times 500 \text{ kb} = 115 \times 10^6 \\ = 115 \text{ mbps}$$

Winter (in coming)

$$23 \text{ photos/sec} \times 500 \text{ kb} = 11.5 \text{ Mbps}$$

## CACHE

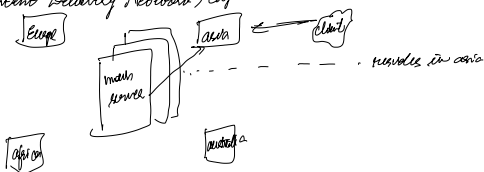
websites  $2^M$  photos/day  $\times 0.2 \times 500$  bytes

$$= 2 \times 10^6 \times 10 \times 10^3$$

$$= 2 \times 10^6 \times 10^5$$

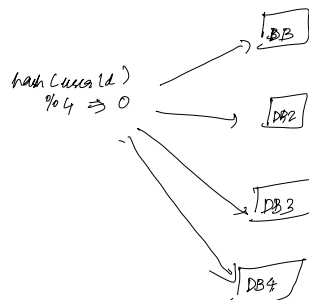
= 200 GB (Giga Byte) (just for photos)

CDN - (Content Delivery Network) edf same



Cache Ejection : LRU

## DATABASE PARTITIONING.



healthcare  
not a balance

weighted sound sabin

(News feed)

Notification

✓ push

pull  
out

you

← check with server again  
if there is an update.

