System Design :

E-commerce.

Clients. —I.P. address 10.2.3.4→ server [2cpu 4GB RAM]
↳ machine.
↳ 24/7.
↳ I.P. address
[high request]

components.

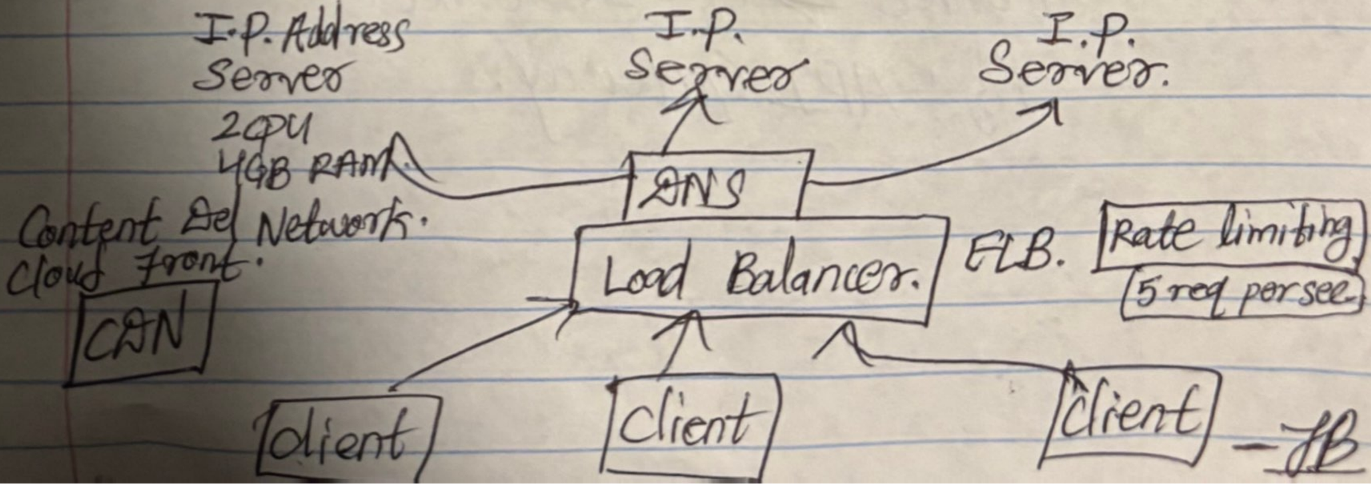
DNS Server : key-value pair.
name — I.P. address.
returns I.P. address
DNS revolution.

Vertical scaling : Adding more resources to a single server or cpu. in a physical machine.

pros : down time

Rate limiting.
→ Leaky Bucket
→ Token Bucket
when, how use? learn.

Horizontal Scaling :



— JB

Load Balancer :

1. Round Robin distribution :

I^st req → I^st server
II^nd req → II^nd server
& so on.

Is server healthy ? Ready to take data ?
If yes, send data, else not.

Amazon term :- Elastic load balancer.

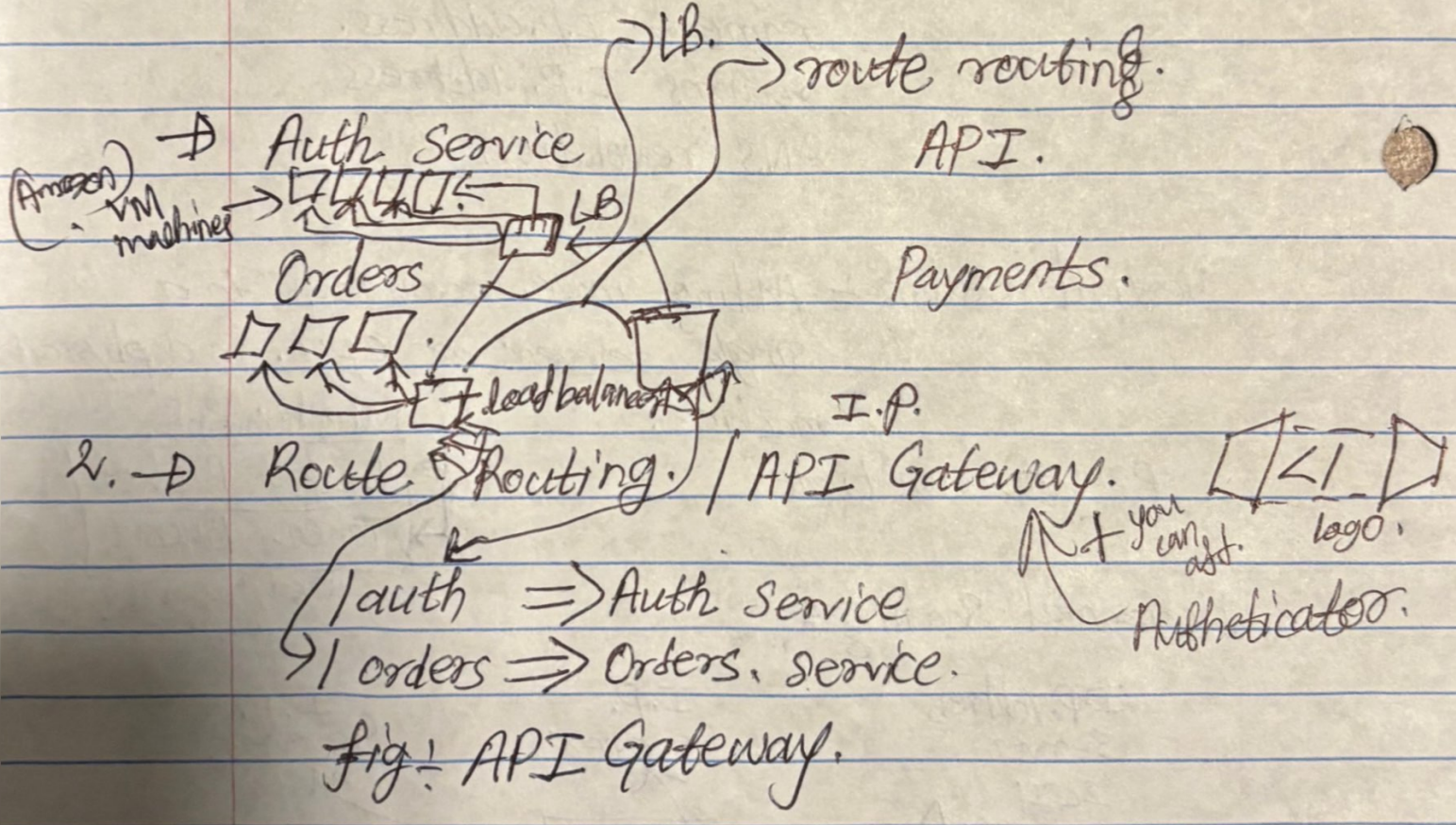
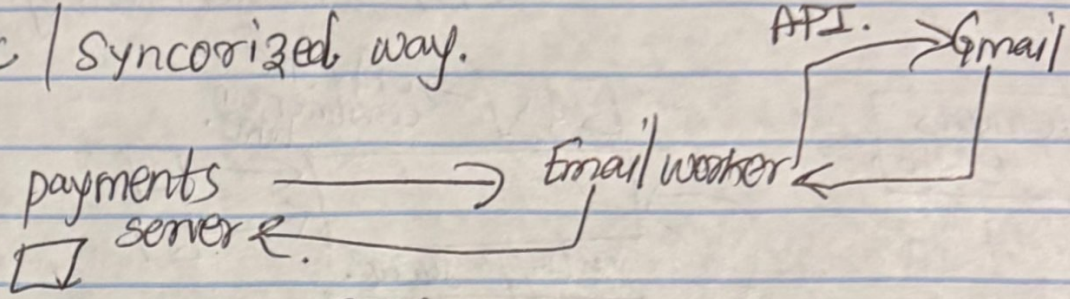


fig :- API Gateway.

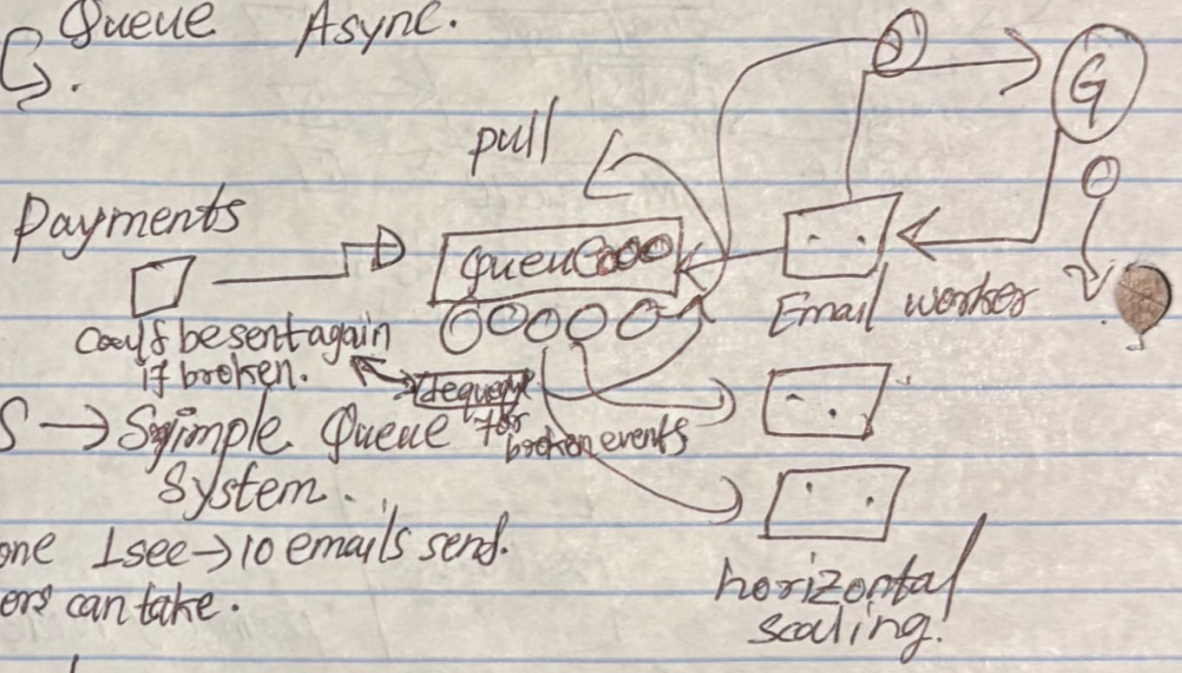
— LB

3. Batch processing.

→ Sync / Syncorized way.



↳ Queue Async.

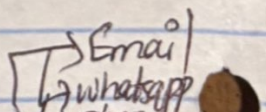


Event Driven architectures.

push
↳ pull mechanisms. ↔ in SQS system.
Email workers asks for the ~~emails~~.

Short pulling → pull instantly
Long pulling → wait for 1os & pull.

→ one events → pop sub model → SNS
↳ no retrive mechanism ↳ multiple users ↳ simple notification system.
↳ one's lost - always lost. can excess.

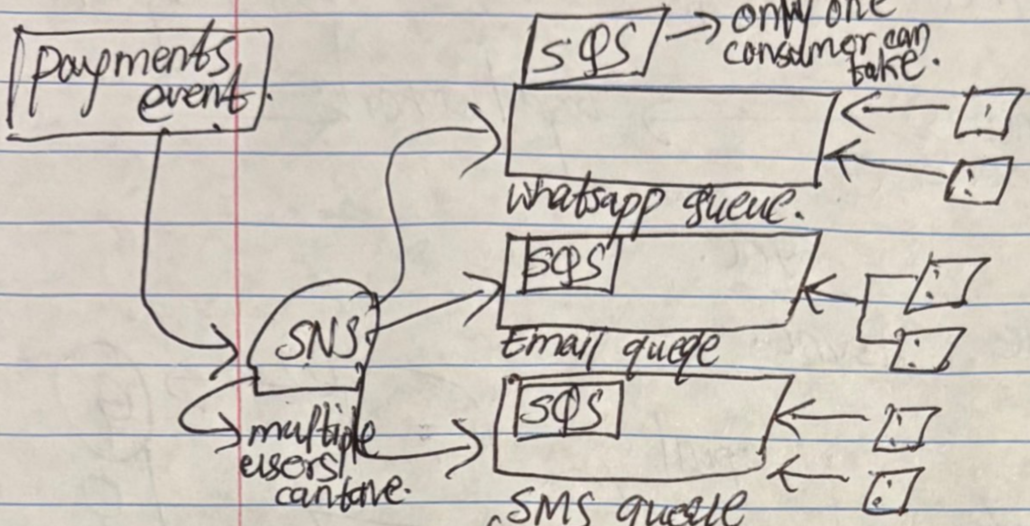


pub sub | public subscribe. Artitecture.

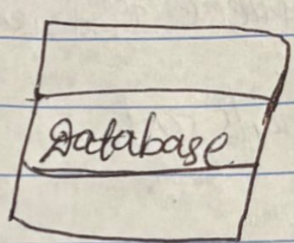
app.eraser.io

4. ~~Frank~~ Fan. -out-Artitectures.

SNS → no acknowledge.

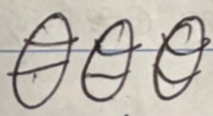


retrive could do bez of SQS used.

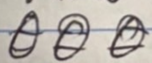


primary Node.

write operation
read operation. — replicas.



Read replica.



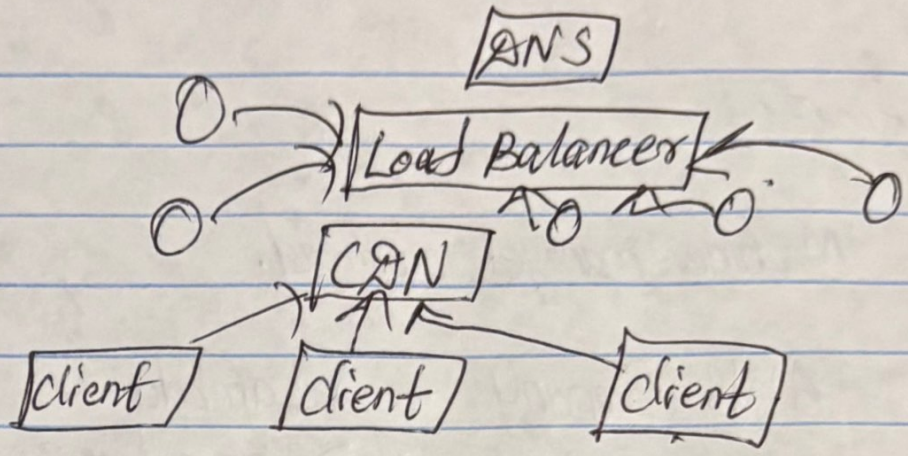
Redish.

cache — redish.

—JB.

I.P. I.P. I.P. ⑤.

5.

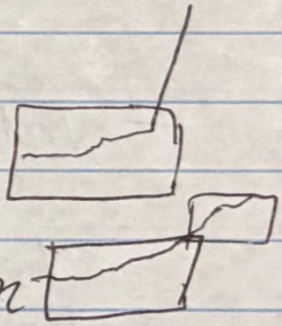


cloud front ⓪ ⓪.

AnyCast.

System – Design – 2.

Lambda – Server-less ?
Kuberatized.
Docker container.

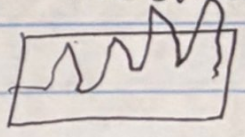


Steep server.
Spike server → scales → Netflix

Netflix → CDN – tom part caches. → server load down

Youtube → No traffic prediction → need to handle sudden spike.

Hotstar → prediction traffic → when movies but not in dive streaming.
Learn traffic pattern.



– FB

Amazon.

Machine managed overhead.

AWS Company → Lambda
↳ Serverless ≠ You don't manage the server.

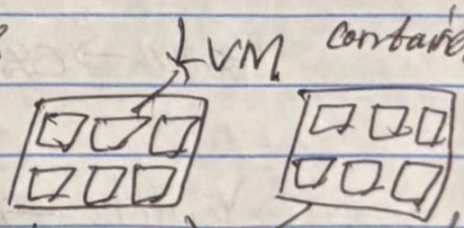
Cons ≠ Cold start.
- first user may face lateney.

Pros ≠ Cheap. 1M free req per month.
3.2M seconds of compute.

Cons ≠ - Cold Start
- Duration Fixed
- DDOS attack
- Verdor Lock-In
- No configuration
- Stateless

LM (local machine)

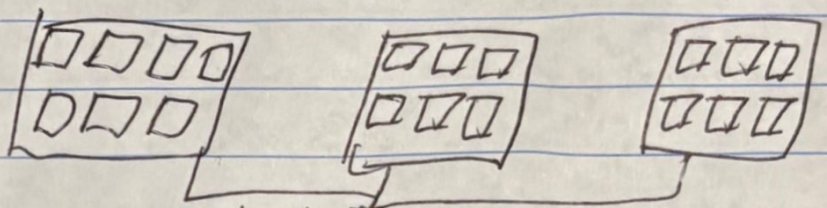
— Virtualization ≠ VM (Ubuntu)
FFMPEG. → Server
This helps to get rid of Seploy.
depensenties. Run on any machines.
- more resources
- takes time



Containerization.
L Lightweight VM
↳ NO OS.
VM - OS, Packages, code.
- NO OS.
VM = packages, code.
machines/servers

Containers managed :-
Containers Managed Brain.

Container orchestration :-
- Automating deployment, management & scaling of containerized apps. across the cluster of servers



cluster of servers

new container apps → delete old containers need containers brain.

↳ google Borg.
Cluster management System

Borg → rewrite → Project X → open source
↳ auto update → Donate to CNCF
↳ auto delete

↳ kubernetes → CNCF
K8s. → Open source.
↳ automates deployment
↳ scaling & manages the cluster of servers.
→ 0 downtime.

Modern dept Development uses kubernetes.

— Jeeban Bohra