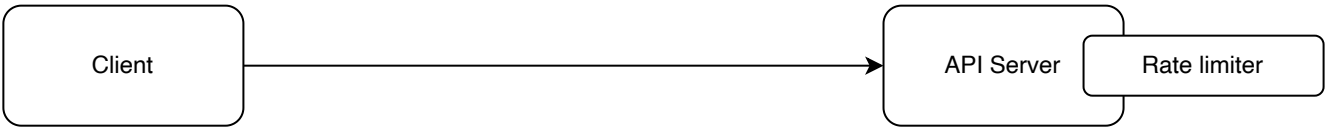# Rate Limiter
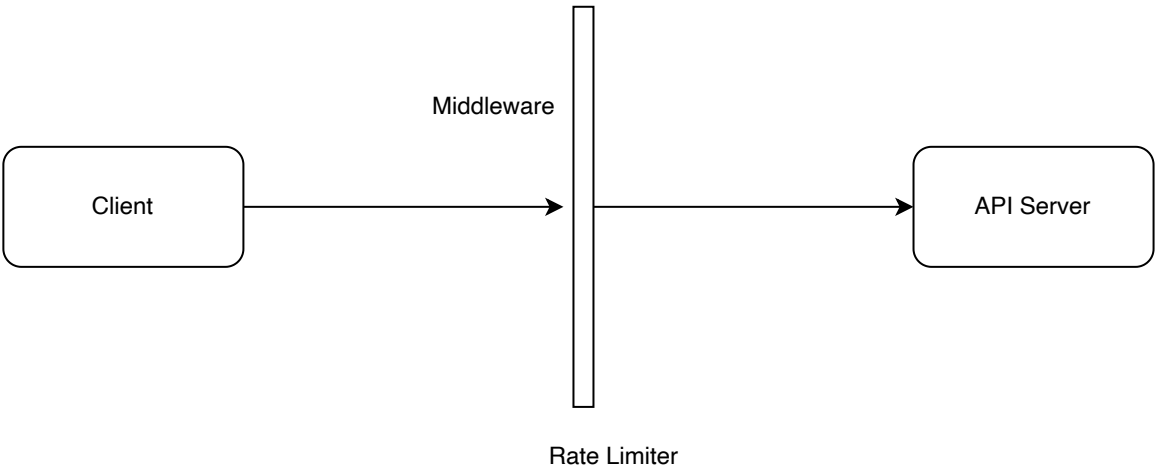
Requirements

-Server side rate limiter.

-Rate limit on the basis of user_id/IP- should be able to follow different set of rules for throttling requets.

-system should work in distribute env.

-user should be intimated of throttled requests.

HLD-1(Server side rate limiter)

```
┌──────────┐                    ┌────────────────────────────┐
│          │                    │ API Server │ Rate limiter  │
│  Client  │───────────────────▶│            │               │
│          │                    │            │               │
└──────────┘                    └────────────────────────────┘
```

HLD-2(Rate limiter as middleware)

```
                    Middleware
                        │
┌──────────┐           ┌┐            ┌────────────┐
│          │           ││            │            │
│  Client  │──────────▶││──────────▶ │ API Server │
│          │           ││            │            │
└──────────┘           └┘            └────────────┘
                    Rate Limiter
```
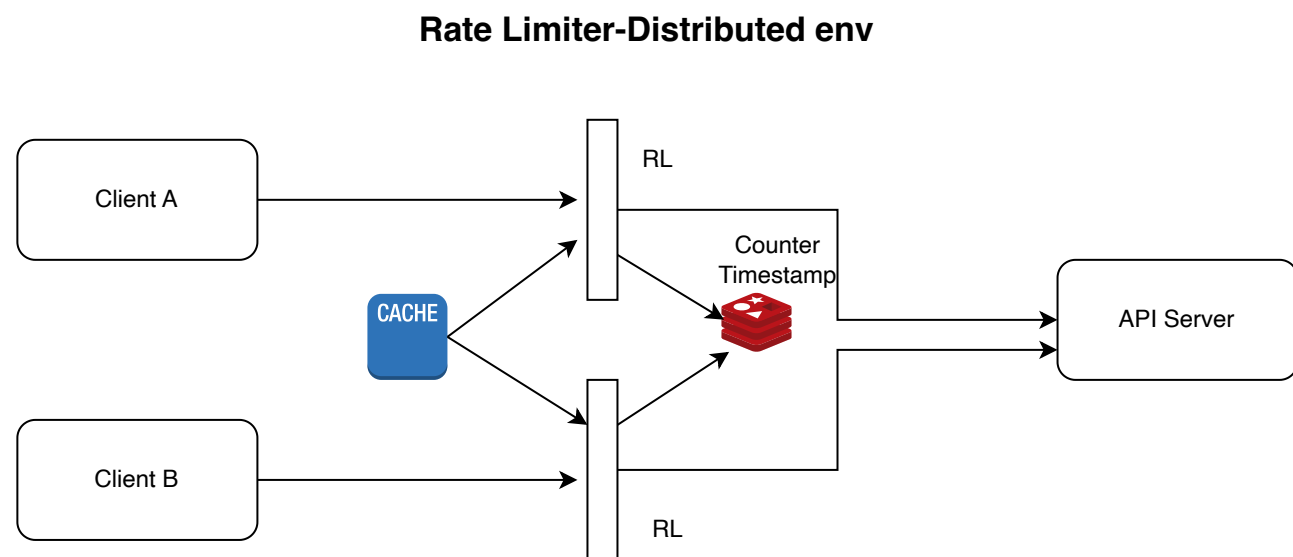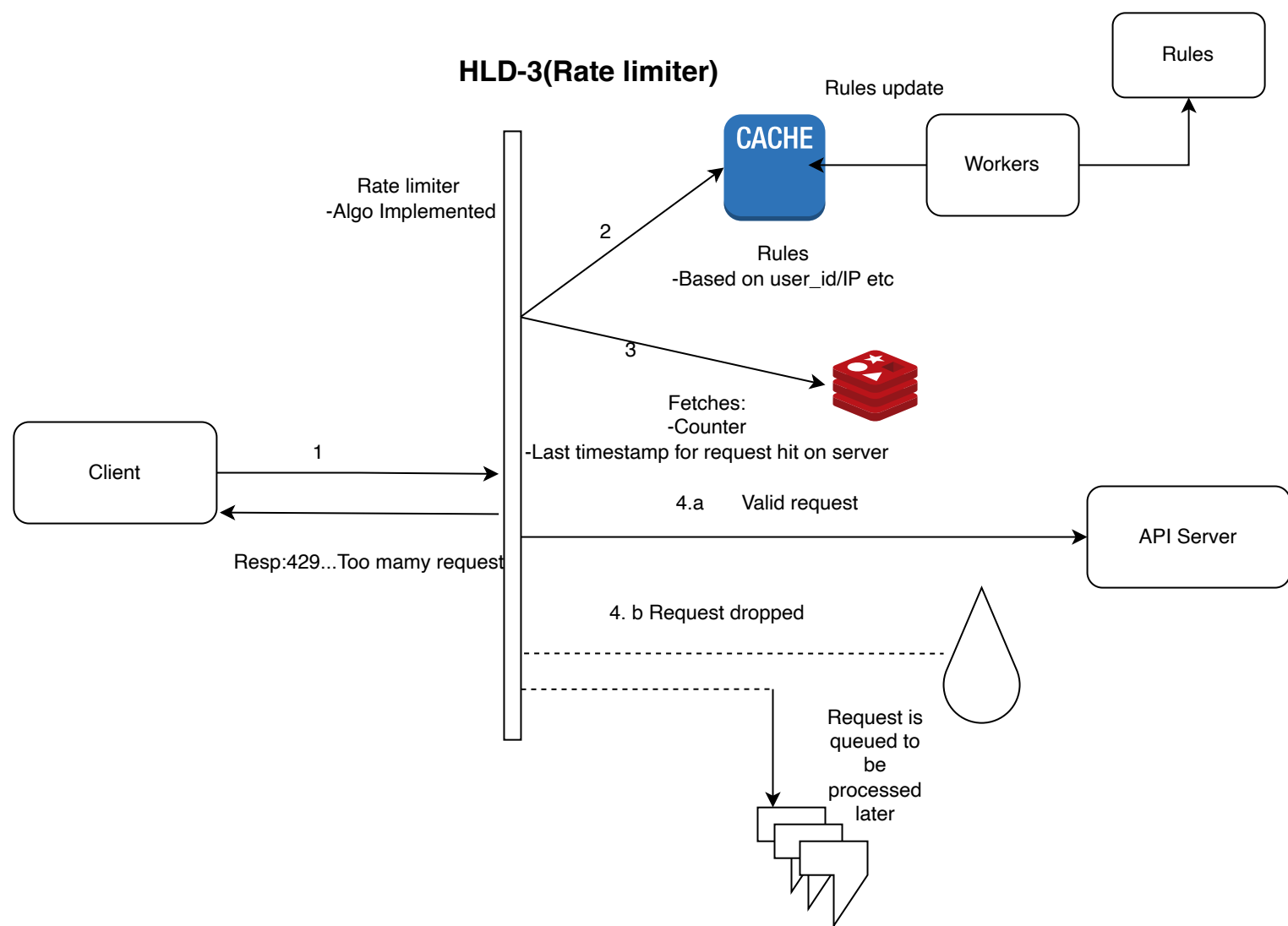
LDD(Rate Limiter)

Token bucket

Leaking bucket

Fixed window   Sliding window log   Sliding window counter

HLD-3(Rate limiter)

Rules update

Rules

CACHE

Workers

Rate limiter
-Algo Implemented

2

Rules
-Based on user_id/IP etc

3

Fetches:
-Counter
-Last timestamp for request hit on server

Client

1

4.a   Valid request

API Server

Resp:429...Too mamy request

4. b Request dropped

Request is
queued to
be
processed
later

Rate Limiter-Distributed env

Client A

RL

Counter
Timestamp

API Server

CACHE

Client B

RL

Issues
-Race condition

Redis   Count=3

Redis   Coun=4

Redis   Count=3

Redis   Count=4   But counter should be=5