



#ASLI ENGINEERING

Keeping phone numbers secure



BY

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Virtual Phone Numbers @ Gojek

Phone numbers are critical

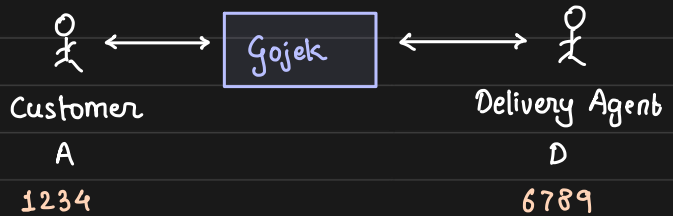
because it is Personally Identifiable Information

Hence companies like Uber, Ola, Gojek, Swiggy, etc do not share them with others.

Virtual Phone Numbers

Then how do we receive calls from delivery agents??

1. A should not get D's
2. D should not get A's
3. A and D should be able to talk to each other

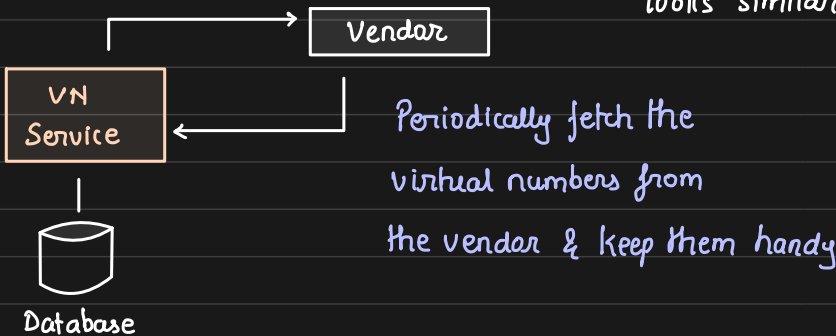


Solution: Virtual Phone Numbers

Telecom provider like Airtel, Jio, Exotel, Twilio provide Virtual Numbers



looks similar but functional



So, does every user gets a virtual number?

If there is a $1 \leftrightarrow 1$ mapping then it is easy to deduce

hence, not really secure

You can always store and abuse

So, having a fixed user \rightarrow VN \times

A — 123 — AAA

B — 456 — BBB

C — 789 — CCC

What about user who use app just once a lot of VN will be wasted.

Hence virtual number assignment should be by

1. on-demand

2. temporary for a 'transaction' / 'order'

Virtual Number Assignment

Virtual Number is assigned to all the involved parties in a transaction

eg: A booked and order } order id: xxx
Delivery agent D is assigned }

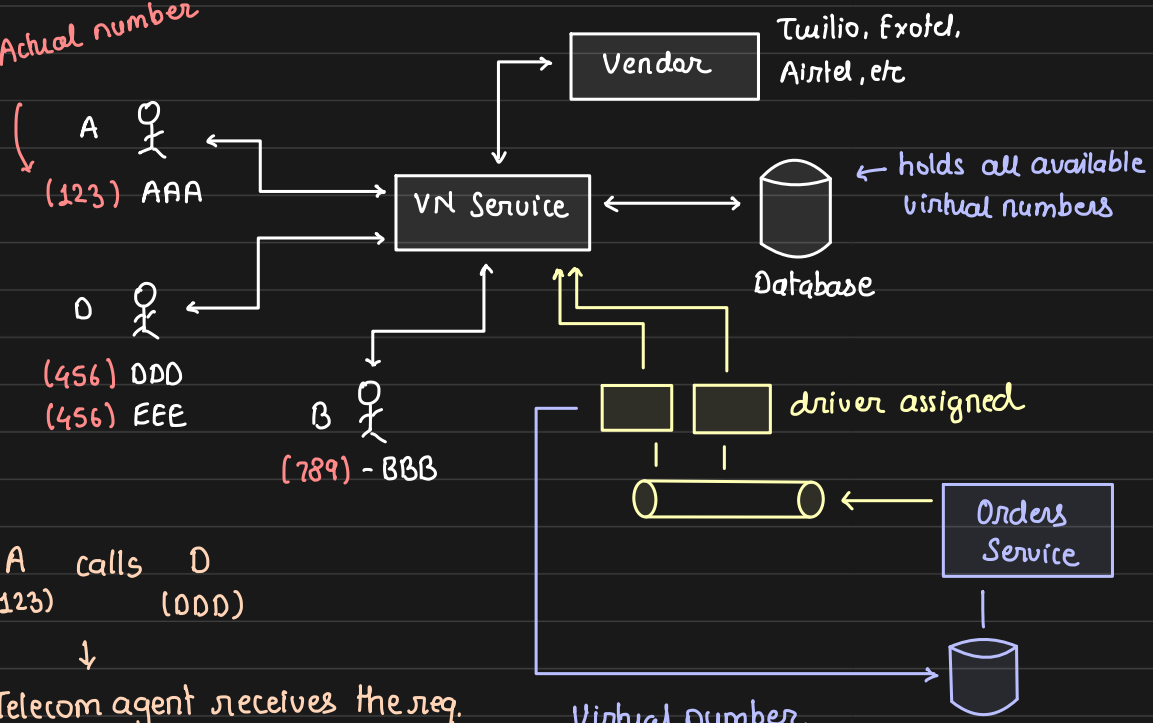
Two virtual numbers are fetched from the database

and assigned to this transaction

if a delivery agent is delivering two orders at a time,

it will be assigned two VN, one for each transaction

Actual number



A calls D
(123) (000)
↓

Telecom agent receives the req.
it makes call to VN service
VN service validates the req
and responds A's VN and
D's actual (AAA - 456)

Telecom then calls D on (456)
with source = AAA

Virtual number
Stored in orders DB
and shared with customers and
delivery agent through app.