

pgx-outbox

FOSDEM lightning talk

1 Feb 2025

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About me

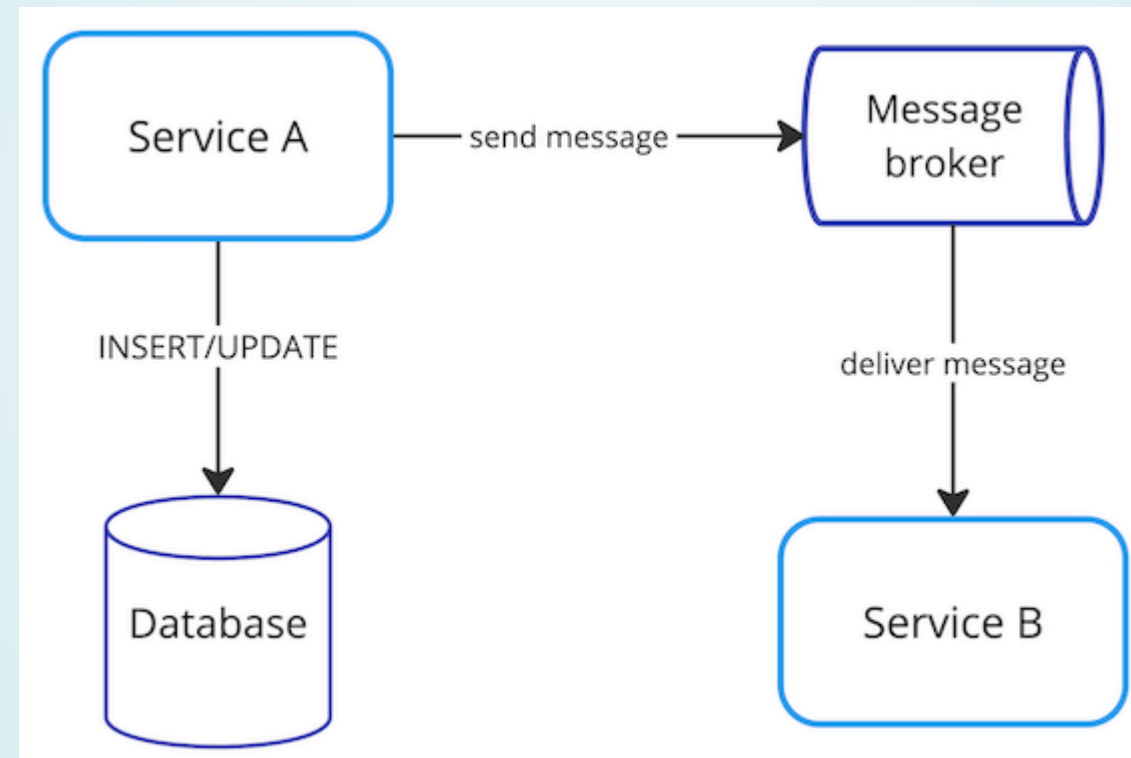
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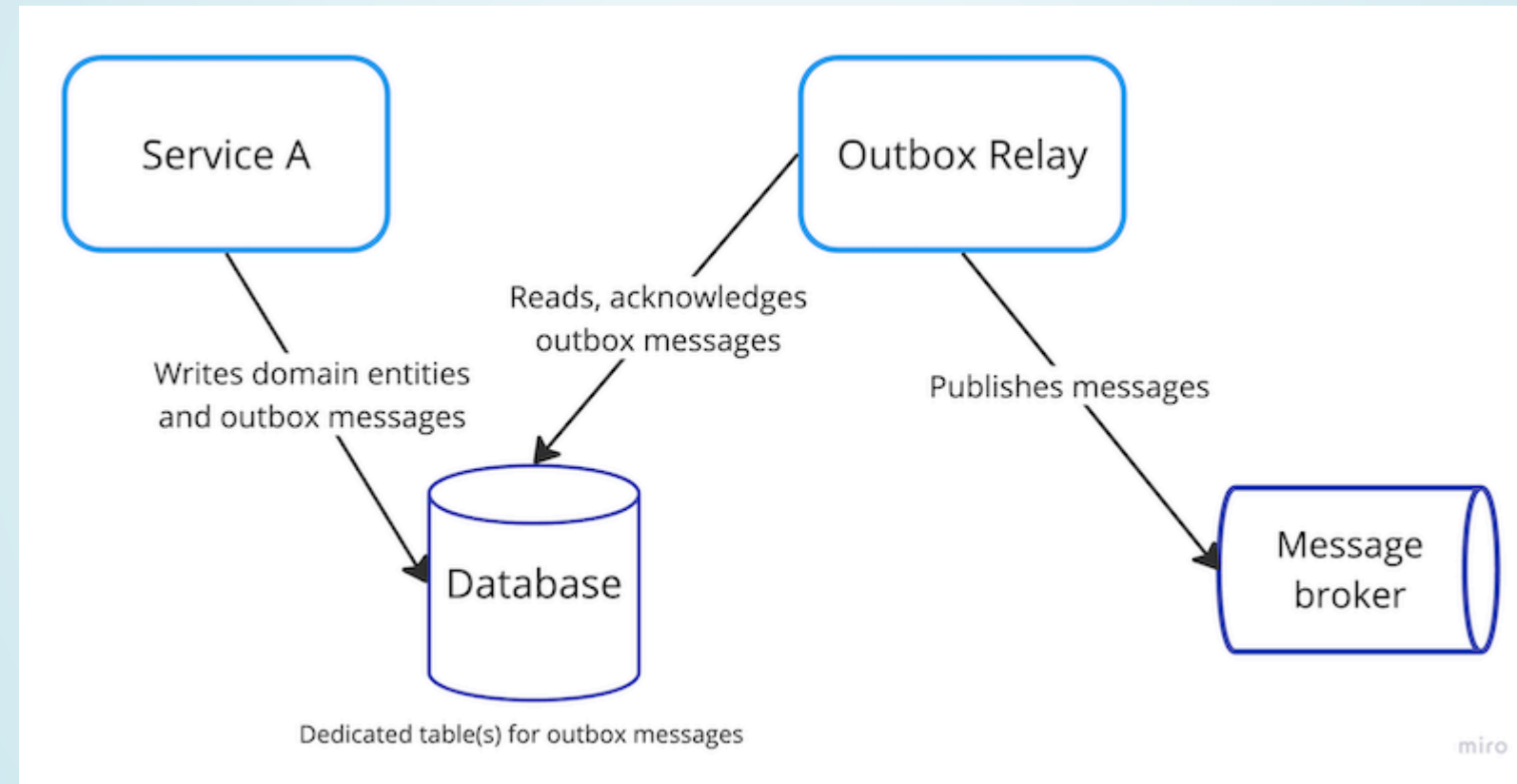
Pre-owned project

C → Java → Kotlin → Go

Dual write problem



Transactional outbox pattern



pgx-outbox library



implements

- Message
- Writer (Postgres)
- Reader
- Forwarder
- Publisher (SNS)

Outbox message

```
type Message struct {  
    ID int64 // generated by Postgres  
    Broker string `validate:"required"`  
    Topic string `validate:"required"`  
    Metadata map[string]string // optional  
    Payload []byte `validate:"required,json"`  
}
```

Outbox writer

```
type Writer interface {  
    // Tx is empty interface to support both pgx.Tx and *sql.Tx  
    Write(ctx, tx Tx, message Message) (int64, error)  
  
    // pgx transaction only to invoke SendBatch and Prepare methods  
    WriteBatch(ctx, tx pgx.Tx, messages []Message) ([]int64, error)  
}
```


Writer demo

id	broker	topic	metadata	payload	created_at	published_at
15661	sns	topic1	{"span_id": "c49	{"id": "53e5c847-2	2025-01-14 20:32:0...	<null>
15660	sns	topic1	{"span_id": "f63	{"id": "a1ebcbc9-1	2025-01-14 20:31:5...	<null>
15659	sns	topic1	{"span_id": "df3	{"id": "587aeb48-e	2025-01-14 20:31:5...	<null>
15658	sns	topic1	{"span_id": "aa8	{"id": "1cd86f9d-9	2025-01-14 20:31:5...	<null>

pgx-outbox/writer user_created (11.25ms)	LOG	
pool.acquire (3.32ms)	LOG	3.32ms
query begin (1.4ms)	LOG	1.4ms
query INSERT INTO users (id, name, age) VALUES (\$1, \$2, \$3) RETURNING created_at	LOG	1.78ms
query INSERT INTO outbox_messages (broker,topic,metadata,payload) VALUES (\$1,\$2,	LOG	1.28ms
query commit (2.98ms)	LOG	2.98ms

WAL Reader support

Write ahead log (WAL), aka

Change data capture (CDC), aka

Postgres logical replication

Work in progress (WIP)

using *jackc/pglogrepl*

Thank you!



github.com/nikolayk812/pgx-outbox