Seemless Transitions

Lessons from a Data Migration for a Mission-Critical App

by Ryan Clements, Owner of Byte Bot 🤖

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- ChatGPT

How would you do it?

Goals

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🔍 Learn how to identify the need for a data migration

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💣 Learn how to avoid common failure modes

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- 🌐 bytebot.io
- 📧 info@bytebot.io
- 🐤 @RyanClementsHax
- 📩 bytebot.beehiiv.com/subscribe

Let’s set the scene

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The investment firm in question will be unnamed to respect their security policy

The application

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🔬 Internal data science tool providing in depth analysis to 1000+ investments

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👨‍💼 Supports 200+ employees across various departments

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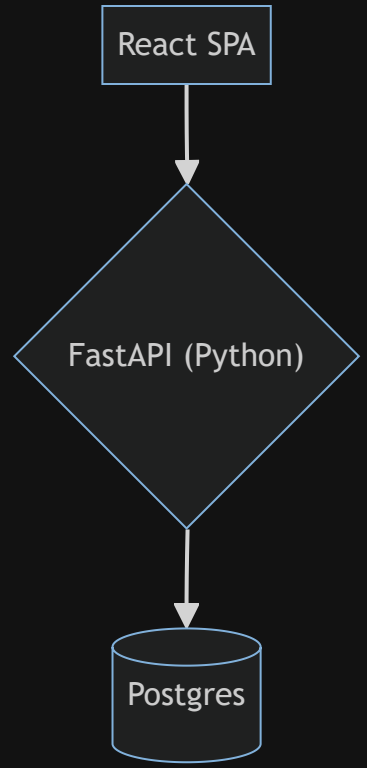
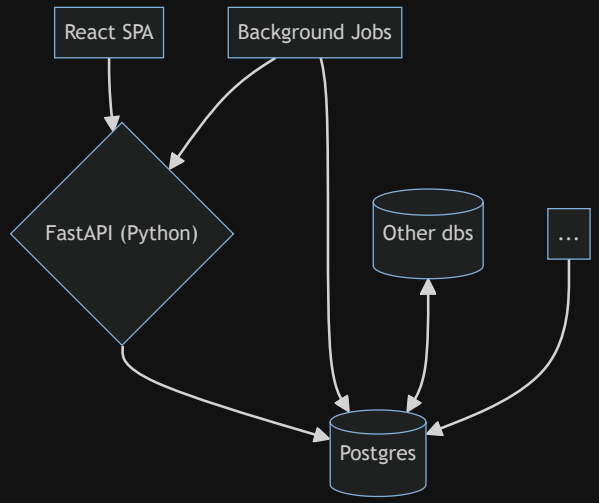
📊 Surfaces fund composition and risk exposures in one place


React SPA
FastAPI (Python)
Postgres


React SPA
Background Jobs
FastAPI (Python)
Other dbs
...
Postgres

Problem: We want to automate document tracking

They all owe us documents regularly

Let’s see how we model the data

Take guarantor data for an example

```
CREATE TABLE loans (
    id UUID PRIMARY KEY DEFAULT uuid_generate_v4(),
    guarantor TEXT, -- arbitrary text
    -- a ton of other fields ...
);
```

Example data

- Meridian Capital Advisors
- Oakridge Asset Holdings, Zenith Equity Management, Atlas Property Holdings
- Redwood Holdings & Co. & NorthStar Investment Trust
- (a) Fortress Capital Advisors (b) Endeavor Capital Ventures © John Doe
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Why is this an issue?

```
CREATE TABLE loans (
    id UUID PRIMARY KEY DEFAULT uuid_generate_v4(),
    guarantor TEXT,
    -- ...
);
```

What we really wanted

```
CREATE TABLE loans (
    id UUID PRIMARY KEY DEFAULT uuid_generate_v4(),
    -- ...
);
CREATE TABLE guarantors (
    id UUID PRIMARY KEY DEFAULT uuid_generate_v4(),
    name TEXT,
    loan_id UUID REFERENCES loans(id)
);
```

First, we explored other solutions

```
uuid.uuid5(loan.id, "guarantor-1")
```

Key parts of the alignment document

- What is the context?
- What needs to change?
- What do we gain from this?
- What could we be doing instead?
- What other options are there?
- What are their tradeoffs?
- What committments does this need?
- Do we need to do all of it or can we chunk it?

👍 , but let’s do guarantor data first

Time to plan

Migration strategies

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- Big bang

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- ✌️ Parallel or dual writes

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- 📨 Event driven

Which one do we use?

Know your application!

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- 🕒 Users clocked out at the end of the week, allowing for downtime
- 📉 Low-traffic features, reducing complexity during the migration
- ✊ Limited data size, allowing manual verification

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- 🧮 Needed full CRUD over guarantors
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- 📩 Reporting export

What do you think?

We went with big bang  (but technically phased)

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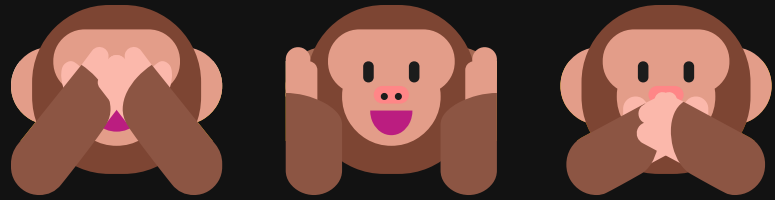
- What steps does it need to happen in?
- Are there any dependencies to deployment?
- How will you verify it? (Cannot stress how important this is)

We got everything done in a sprint and there weren’t any issues



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- ❌ Few people knew how the FDW worked or how to develop/test changes to it
- ❌ And one other one…

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- 💥 Expect there to be bumps, and the only way to find all of them is to actually do the work
- 🙈 Even the directly responsible engineers don’t always fully understand the system

Got questions?

SCAN ME

Here’s how we can stay in touch

- bytebot.io
- info@bytebot.io
- @RyanClementsHax
- bytebot.beehiiv.com/subscribe