Practice Credit System - Design Document

Author:

Dean Movshovitz

Date:

2025-07-12

Summary:

System set to address some of the needs of a credit-based payment system for practices using the application.

2. Goals & Non-Goals

Goals:

- Participating practices should be able to peruse available packages
- Participating practices should be able to buy credit packages
- Participating practices should be able to check their balance
- Participating practices should be able to check transaction history
- Logic for sending SMS/VCs should be implemented, but not yet made available on APi.

3. Architecture Diagram

Application layers:
- API Gateway
- Django backend
- PostgreSQL database

4. Components

4.1 API Layer
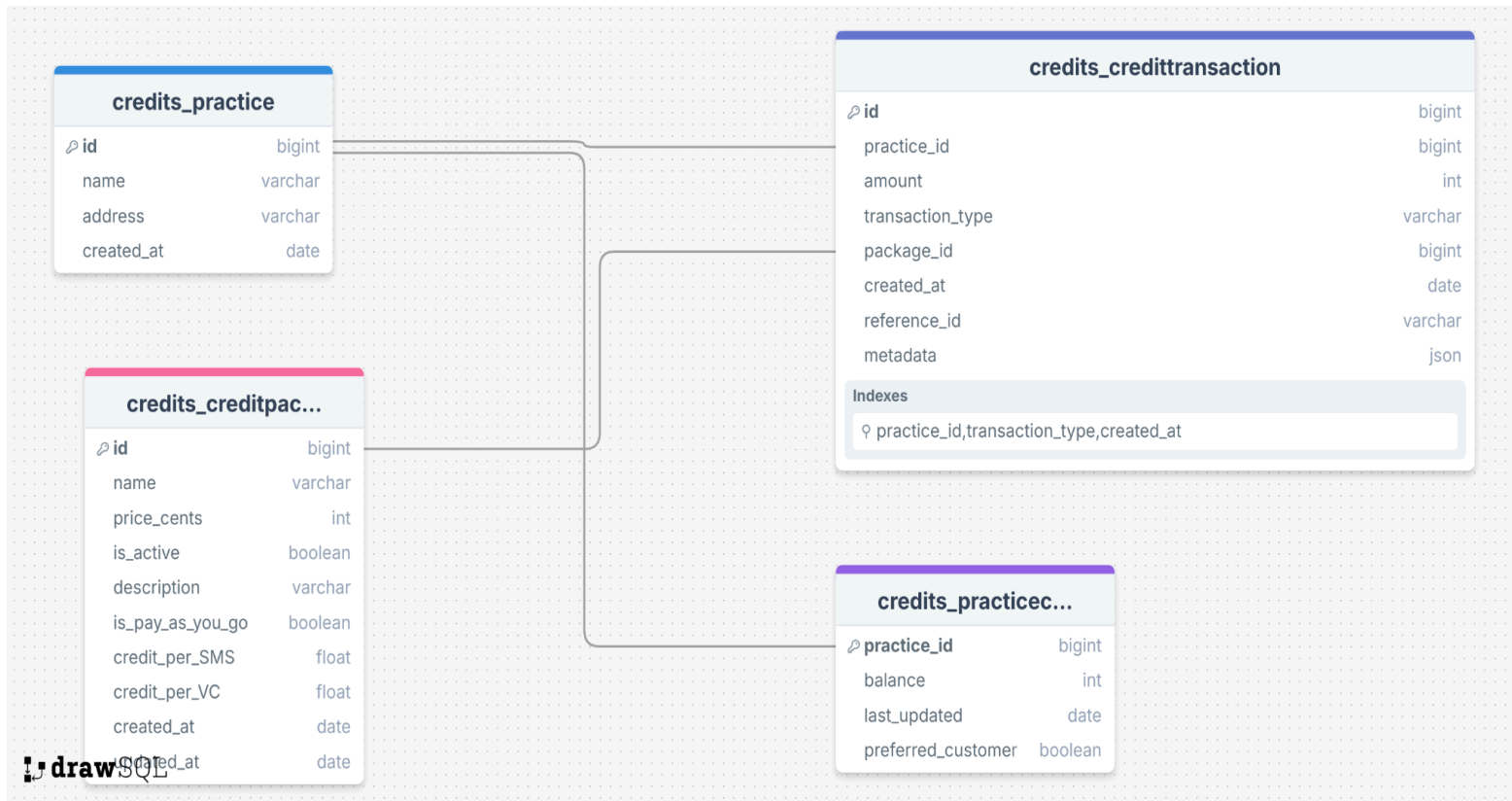
Framework:

Django REST Framework

Endpoints:
- GET: /api/credits/packages/ - List Available Credit Packages
- POST: /api/credits/purchase/ - Purchase a package of credits
- GET: /api/credits/balance/?practice_id=123 - Check credit balance
- GET: /api/credits/transactions/?practice_id=123 - See practice's past transactions

4.2 Database

<u>Engine:</u> PostgreSQL
<u>Schema:</u>

5. Data Flow

5.1 When user deploys SMS/VCs (to be implemented)

1. API (to be implemented) receives POST /api/credits/campaign/
2. Python backend receives needed information about the campaign.
3. Backend calculates how many credits the campaign will use
   a. Backend checks if practice has enough credits for action
      i. If practice doesn't, backend checks if practice is preferred customer
         1. If practice is preferred, backend approves transaction
         2. If practice isn't preferred, backend fails action
         3. Either way, a transaction is recorded, and practice credit balance is updated.
      ii. If practice has enough credits, transaction is approved and recorded, practice credits deducted from practice's balance

1. Backend checks practice's remaining credit balance, provides an estimate of the number of SMS/VCs practice can deploy, and alerts if credit balance is low.

5.2 When user buys a package

1. API receives POST /api/credits/purchase/
   a. with a payload including: practice identifier, package identifier, and payment method details
2. Python backend processes payment, resulting in a success/failure status.
   a. If success:
      i. Add credits to practice balance
   b. If failure:
      i. Leave credit balance unchanged
   c. Either way, log transaction
3. Backend estimates how many SMS and VC mins practice has left on current package.
4. Backend returns estimation and transaction details.

6. Pricing Strategy

6.1 Context

Our company is targeting independent audiology practices all over the US. Part of the strategy, along with crafting a superior product, is assisting clients in an easy transition from older software, is a competitive yet lucrative pricing strategy for our services, specifically sending texts and voice messages.

According to chatgpt, our clients - US audiology clinics are distributed as follows:
1. **Solo Clinics (1 audiologist)** make up 40-50%, have ~200 unique clients a year over ~400 appointments.
2. **Small Clinics (2-3 audiologists)** make up 30-35%, have 400–600 unique clients a year over ~800-1200 appointments.
3. **Medium Clinics (~5 audiologists)** make up 15-20%, have ~1000 unique clients a year over ~2000 appointments.
4. **Large/Multi-Location Clinics (8-12+ audiologists)** make up 5-10%, have 1600-2400 unique clients a year over~3200-4800 appointments.

6.2 Pricing Objectives

- **Flexibility**. We want to make sure every practice can find a package that suits their specific needs.
- **Convenience**. Make sure clients don't need to worry too much about how many credits they have left (i.e. big enough packages), while also allowing them to pay a bit at a time, or in bulk.

- **Competitiveness**. While we have quickly and effectively taken over a meaningful share of the market, we are still growing. Competitive pricing will help bring over more new clients.
- **Retention**. We also want to keep existing clients, which might suggest considering benefits for existing/loyal customers such as locked in prices, preferred deals, etc.

6.3 Package Design Factors

SMS Messaging:
- Number of recipients
- Sender type: Long code, toll-free, or short code
- Message length (segments = 153 characters)
- Billing model: Pay-as-you-go or prepaid tiered packages
- At this time, I'm addressing domestic U.S. delivery only.

Voice Calling:
- Number of recipients
- Caller ID type: Local (clean), toll-free
- Time of day
- Call duration (total monthly minutes)
- Billing model: Pay-as-you-go or bundled minutes
- At this time, I'm addressing domestic U.S. delivery only.

6.4 Competition Pricing Benchmarks

Twilio Pricing pay-as-you-go:

- SMS (long code): $0.0083 per outbound message
- Voice call (local): $0.0140/min

Twilio Pricing for VC bulk pricing:

- SMS: starts at $0.0083/msg (first 150k msgs), ends at $0.0073/min (over 1 million msgs)
- Voice (local): starts at $0.0085/min (first 100k mins), ends at $0.0030/min (over 100 million mins)

6.5 Suggested Packages

Most of our clients won't be sending as many messages/VCs as Twilio. Even at 3 reminders per appointment (2 before and one after), and a happy birthday per client, our small clinics only get to 2800-4100 texts a year. So we have to offer smaller packages.

My numbers are probably off due to my limited familiarity and understanding of the field, but hopefully the vector and intention is sensible.

At this time I am also not addressing the different types of numbers we could call/text from, and price accordingly.

1. Pay as You Go (for 365 days).
   Buy credits (1 credit = $0.0001), and send messages/VC until you run out of credits
   a. SMS:
      i. First 500 - $0.0085/msg - 42.5K credits
      ii. Next 1000 - $0.0083/msg - 83K credits
      iii. Next 2000 - $0.0081/msg - 162K credits
      iv. Next 3000 - $0.0079/msg - 2.7K credits
      v. Next 5000 - $0.0077/msg - 385K credits
      vi. Anything beyond 11500 - $0.0074/msg
   b. VC:
      i. First 500 - $0.0160/min - 80K credits
      ii. Next 1000 - $0.0158/min - 158K credits
      iii. Next 2000 - $0.0156/min - 312K credits
      iv. Next 5000 - $0.0154/min - 770K credits
      v. Next 10000 - $0.0152/min - 1.250M credits
      vi. Anything beyond 18500 - $0.0149/min
5. Solo Clinics -
   a. SMS - 1000 msgs/month. $0.0083/msg. 83K credits.
   b. VC - 1000 mins/month. $0.0155/min. 155K credits.
6. Small Clinics -
   a. SMS - 3500 msgs/month. $0.0081/msg. 283.5K credits.
   b. VC - 5500- mins/month. $0.0153/min. 841.5K credits.
7. Medium Clinics -
   a. SMS - 7500 msgs/month. $0.0079/msg. 592.5K credits.
   b. VC - 12000 mins/month. $0.0150/min. 1.8M credits.
8. Large Clinics -
   a. SMS - 12000 msgs/month. $0.0076/msg. 912K credits.
   b. VC - 20000 mins/month. $0.0147/min. 2.94M credits.
9. For any of the plans, we can offer to bundle SMS + Voice for a 10% discount on both

7. Future Functionality

1. Right now the program assumes a practice is either in a pay-as-you-go or a prepaid package. If a clinic happens to purchase both, there should be some form of conversion of existing credits into the new program.
2. For pay-as-you-go plans. Business logic to be decided upon the term of the plan (month, year, etc.), and based on that address handling of buying more and more

credits/packages of pay-as-you-go within the same term. (i.e., if a practice buys 50K credits for a pay-as-you-go/month package, and then buys another 50k credits on the same package, from which transaction date are we calculating?)

3. Bundle SMS + Voice also has to be implemented.