**CloudWalk Technical Case – Understanding the Industry**

**Data Analyst - Risk Analyst I**

**Daniel Sousa**

**1. Money Flow, Information Flow, and Roles of Main Players**  
The payment ecosystem is a network of financial institutions and services that work together to move funds and data securely from a customer to a merchant.

* **Money Flow**
  1. **Customer → Issuer**: The customer’s bank (“issuer”) fronts the transaction amount when a purchase is made.
  2. **Issuer → Card Network**: The issuer debits the customer’s account and sends funds to the card network (e.g., Visa, Mastercard).
  3. **Card Network → Acquirer**: The network routes the funds (net of interchange fees) to the acquiring bank.
  4. **Acquirer → Merchant**: The acquirer deposits the settlement (after its own fees) into the merchant’s account. (Stripe, 2025)
* **Information Flow**
  1. **Authorization**: At purchase, transaction data (card number, amount, merchant ID) travels from merchant → gateway → processor → network → issuer.
  2. **Response**: The issuer approves/declines and returns the decision back through the same path.
  3. **Capture & Settlement**: Once approved, the merchant “captures” funds, then at batch close the acquirer and issuer reconcile and settle transactions on a scheduled cycle. (Kalem, 2025)
* **Roles**
  1. **Issuer**: Bank that issues card, holds customer accounts, authorizes transactions.
  2. **Card Network**: Runs the payment rails, sets standards, and routes authorizations and settlements.
  3. **Acquirer**: Bank or financial institution that supports the merchant’s account, receives funds from networks, and pays out merchants. (Kagan, 2024)
  4. **Payment Processor**: Manages technical messaging between gateways, networks, issuers, and acquirers.
  5. **Gateway**: Securely transmits transaction data from the merchant’s point‑of‑sale or website to the processor.

**2. Differences Between Acquirer, Sub‑acquirer, and Payment Gateway**

| **Feature** | **Acquirer** | **Sub‑acquirer (PSP/Payfac)** | **Payment Gateway** |
| --- | --- | --- | --- |
| **Definition** | Bank or FI contracting directly with merchants to process and settle card payments. (Kagan, 2024) | A service provider that aggregates multiple merchants under a single primary merchant account, then routes transactions to an acquirer. (Stripe, 2025) | Technology service that encrypts and routes transaction data between merchant and processor. (Stripe, 2023) |
| **Risk & Liability** | Holds financial risk for chargebacks and non‑payment. | Shares or sub‑delegates risk from the acquirer; often offers simplified onboarding at higher PSP fees. | No financial risk—focuses solely on data transport and security. |
| **Contractual Model** | One‑to‑one contract with each merchant. | One master contract covers multiple small merchants. | Service subscription or integration contract. |
| **Flow Changes** | Funds: Card Network → Acquirer → Merchant Data: Merchant → Gateway → Processor → Network → Issuer. | Funds: Card Network → Acquirer → PSP → Merchant Data: Merchant → Gateway (often bundled) → PSP → Processor → Network. | Data: Merchant → Gateway → Processor → …; Funds unaffected. |

**3. Chargebacks vs. Cancellations and Their Connection to Fraud**

* **Chargeback**
  + A **chargeback** is a forced reversal started by the cardholder disputing a settled transaction with their issuer. The issuer withdraws funds from the merchant’s account and returns them to the customer. (Stripe, 2025)
  + **Lifecycle**: Dispute filed → issuer investigates → provisional credit to cardholder → merchant may show evidence → final decision.
* **Cancellation**
  + A **cancellation** is a merchant‑ or customer‑initiated reversal **before** settlement (i.e., before funds move from issuer to acquirer). No formal dispute occurs, and typically no fees or penalties are incurred.
* **Connection to Fraud**
  + **Fraud‑driven chargebacks** occur when stolen cards, cloned data, or “friendly fraud” (legitimate customers falsely claiming non‑receipt) trigger disputes. (Stripe, 2025)
  + They impose direct monetary loss (sale amount + fixed fees) and indirect costs (higher processing rates, reserve requirements, or termination risk for merchants/acquirers).

**4. What Is Anti‑Fraud and How an Acquirer Uses It**

* **Definition**  
  An **anti‑fraud solution** combines rules‑based engines, machine‑learning models, behavioral analytics, and global fraud intelligence to assess transaction risk in real time and post‑authorization. (Rupp, 2022)
* **Usage by Acquirers**
  1. **Pre‑Authorization Screening**: Transactions are scored against block lists (e.g., high‑risk IPs, BIN ranges) and custom merchant rules.
  2. **Real‑Time Monitoring**: Machine‑learning models analyze patterns (velocity, anomalies) as transactions flow; suspicious ones are held for manual review or declined. (Mastercard, 2022)
  3. **Post‑Authorization Analysis**: Ongoing screening for chargeback risk triggers alerts for high‑risk merchant portfolios, enabling acquirers to intervene (e.g., tightening thresholds, requesting more KYC).
  4. **Chargeback Mitigation**: By flagging at‑risk transactions early, acquirers reduce the volume of costly disputes and keep compliance with network monitoring programs (e.g., Visa Acquirer Monitoring Program).