CloudWalk Technical Case – Understanding the Industry

Data Analyst - Risk Analyst I

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1. Money Flow, Information Flow, and Roles of Main Players

The payment ecosystem is a group of banks and other financial services that work together to safely move money and information from a customer to a merchant.

- **Money Flow**

    1. **Customer → Issuer**: When a customer buys something, their bank ("issuer") pays for it up front.

    2. **Issuer → Card Network**: The issuer takes money out of the customer's account and sends it to the card network (Visa, Mastercard).

    3. **Card Network → Acquirer**: The network sends the money (minus interchange fees) to the bank that is acquiring it.

    4. **Acquirer → Merchant**: The acquirer puts the settlement (after their own fees) into the merchant's account. (Stripe, 2025)

- **Information Flow**

    1. **Authorization**: When you buy something, the transaction data (card number, amount, merchant ID) goes from the merchant to the gateway, then to the processor, then to the network, and finally to the issuer.

    2. **Response**: The issuer either accepts or denies the request and sends the decision back the same way.

    3. **Capture & Settlement**: After approval, the merchant "captures" the money, and then at the end of each batch, the acquirer and issuer settle and reconcile transactions on a set schedule. (Kalem, 2025)

- **Roles**

    o **Issuer**: Financial institution that gives card, keeps customer accounts, approves transactions.

    o **Card Network**: Runs the payment rails, sets standards, and guides authorizations and settlements.

    o **Acquirer**: Bank or financial institution that provides funds to the merchant account, gets compensated by networks, and remunerates merchants. (Kagan, 2024)

    o **Payment Processor**: Manages technical messaging between gateways, networks, issuers, and acquirers.

    o **Gateway**: Securely transmits transaction data from the merchant location 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.

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3. Chargebacks vs. Cancellations and Their Connection to Fraud

- **Chargeback**
  - A **chargeback** is a forced reversal initiated by the cardholder who disputes a settled transaction with their issuer. The issuer takes money out of the merchant's account and gives it back to the consumer. (Stripe, 2025)
  - **Lifecycle**: Dispute filed → issuer investigates → provisional credit to cardholder → merchant may show evidence → final decision.
- **Cancellation**
  - A **cancellation** is a reversal that begins by a merchant or customer **prior** to settlement, meaning that money does not transfer from the issuer to the acquirer. There is not a formal dispute, and there are usually no costs or penalties.
- **Connection to Fraud**
  - **Fraud-driven chargebacks** happen when disputes begin by cloned data, stolen cards, or "friendly fraud," which is when actual customers make up claims they did not receive anything. (Stripe, 2025)

o   They impose indirect costs (higher processing rates, reserve requirements, or termination risk for merchants/acquirers) as well as direct financial losses (sale amount plus fixed fees).

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

- **Definition**
  To evaluate transaction risk in real time and after authorization, an **anti-fraud solution** integrates rules-based engines, machine learning models, behavioral analytics, and global fraud intelligence. (Rupp, 2022)

- **Usage by Acquirers**

  1. **Pre-Authorization Screening**: Transactions are evaluated by the system based on custom merchant rules and block lists (such as high-risk IPs and BIN ranges).

  2. **Real-Time Monitoring**: As transactions occur, machine learning models examine patterns (velocity, anomalies); those that seem suspicious are rejected by the system or held for manual review. (Mastercard, 2022)

  3. **Post-Authorization Analysis**: Continuous chargeback risk screening results in alerts for high-risk merchant portfolios, allowing acquirers to act (e.g., requesting more KYC, tightening thresholds).

  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).

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