# ECOMMERCE - BOGOGO

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## INTRODUCTION

- **Problem:** Bogotá's independent fashion market lacks a scalable, locally-focused e-commerce platform.
- **Gap:** Global solutions (e.g., Shopify) overlook local logistics, vendor analytics, and cultural relevance.
- **Context:** Previous studies indicate that layered cloud architectures improve security and performance under high demand.

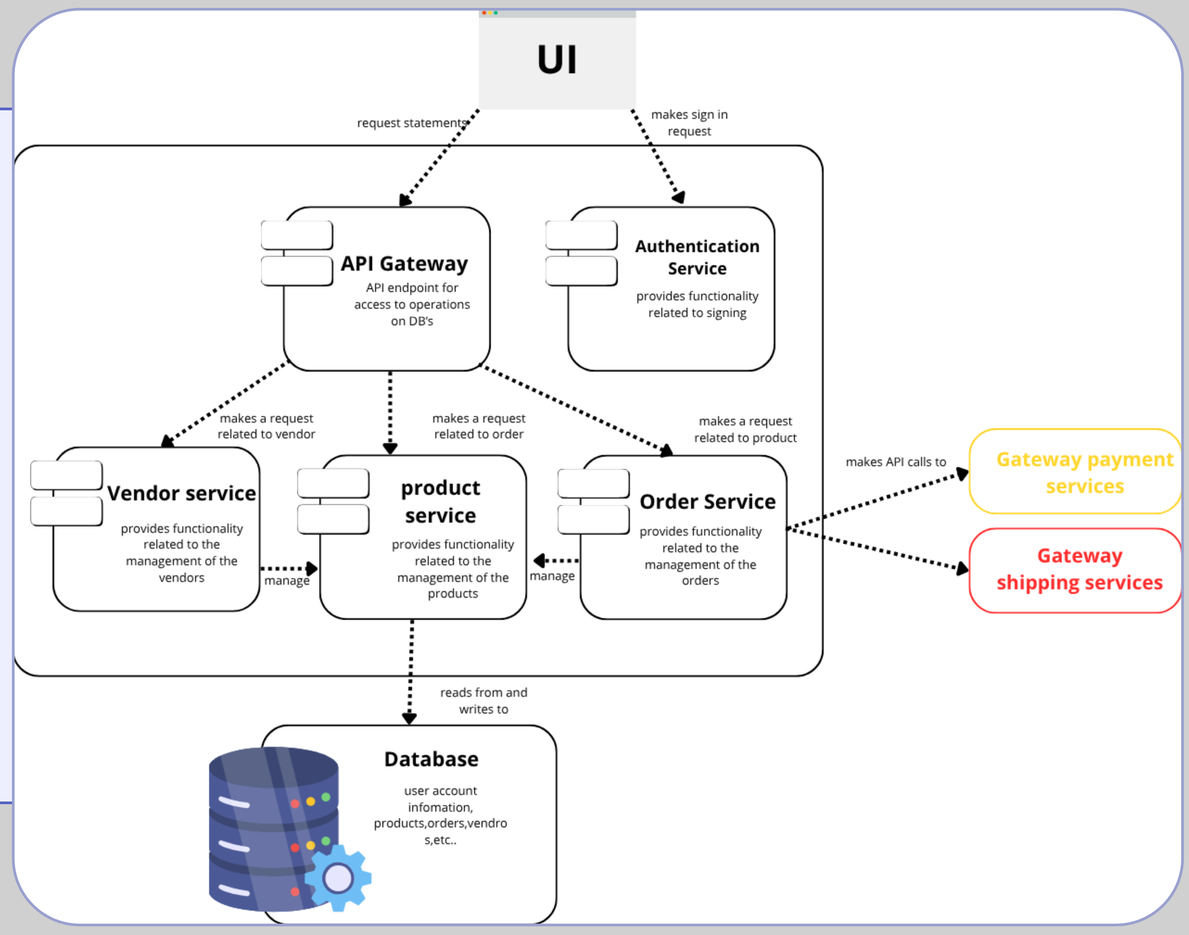
## GOAL

- **Objective:** Design and implement BogoGo, a scalable and secure 3-layer e-commerce platform.
- **Target:** Connect local fashion brands with consumers in Bogotá.
- **Research Question:** Can a cloud-based architecture provide a robust and user-centered solution for local needs?

## SOLUTION

Architecture: Three-Layer Cloud Platform

- **Presentation Layer:** Interact with the backend services via REST APIs
- **Application Layer:** Manages business logic, requests, authentication, and communication with the database .
- **Infrastructure Layer**:
  - Relational Database: SQL database is used to store structured information
  - Object Storage: An object storage service is used to store multimedia a




## RESULTS

- Reliability & Security
- Atomic Operations: Database constraints ensure data integrity and prevent overselling.
- Secure Workflow: Seamless execution from Authentication to Payment without inconsistencies.
- Performance
- Fast Execution: Millisecond-level response times for core order queries.
- Optimized Analytics: Dashboard speeds enhanced via Materialized Views, reducing DB load.
- Scalability
- High Capacity: Validated support for 250,000+ products within Supabase free-tier limits.
- Stability: Architecture remains stable under synthetic high-volume workloads.

## CONCLUSIONS

- Architecture Success: The proposed BaaS-driven stack (React, Supabase, Edge Functions) effectively meets functional requirements for a localized e-commerce ecosystem.
- System Reliability: Functional validation confirmed data consistency and ACID compliance in critical transactions (e.g., inventory updates).
- Performance: Stress tests verified stable latency and seamless end-to-end integration (Payment to Order) under synthetic loads.
- Viability: The platform provides a scalable, cost-effective foundation capable of supporting substantial catalog growth for Bogotá’s SMBs.