



AN for Software Solutions & Training

Bringing a Real Value to our customers

Rocket Mart Case Study

High-Concurrency Multi-Vendor Q-Commerce Marketplace

Live Production:

- <https://apps.apple.com/eg/app/rocket-mart/id6759628447>
- https://play.google.com/store/apps/details?id=com.customer.rocket_mart_customer
- <https://apps.apple.com/eg/app/rocket-mart-partners/id6759681941>
- <https://rocketmartapp.com>

Tech Stack: NestJS · TypeScript · PostgreSQL (PostGIS) · Prisma · Redis · Docker · AWS EC2

1. Overview

Rocket Mart is a high-velocity, multi-vendor Q-commerce and logistics platform. Built collaboratively within a tight two-person engineering team, the backend and infrastructure were solely architected to ensure the system could seamlessly handle concurrent consumer orders and real-time fleet dispatching.

2. The Architectural Challenge & Solution

Q-commerce platforms fail if their databases lock up under concurrent order pressure or if location queries latency spikes. Prisma ORM enforces strict ACID-compliant transactions, ensuring financial data integrity during high-concurrency checkouts, while the infrastructure focuses entirely on speed and resilience.

3. Key Engineering Highlights

- **Geospatial Speed (Sub-100ms):** Advanced PostGIS geospatial queries calculate "nearest store" and dispatch logistics. Even under heavy load, these calculations achieve sub-100ms response times.
- **Redis Caching Layer:** Intelligent Redis caching strategies integrated across the platform successfully reduced overall API latency by 35%.
- **Decoupled Micro-Monolith:** The backend architecture utilizes the Adapter design pattern. This cleanly decouples core business logic from external logistics providers and the Paymob payment gateway, allowing seamless vendor swaps without rewriting core contracts.
- **Automated Production Safeguards:** Deployed on AWS Linux EC2 instances, utilizing SystemD process orchestration for self-healing restarts and custom Bash cron jobs for log rotation and 6-hour interval database backups, achieving zero unplanned downtime.