Wynsum POS Terminal

High-Performance Edge-Native Interface with Zero Trust Security

Author: Vadym Melnychenko
Higher Diploma in Science in Computer Science
Supervisor: Michael McMahon

The Hybrid Paradox

Legacy: Offline-capable, but architecturally rigid.

Cloud: Flexible, but internet-dependent.

Wynsum: Edge-native bridge ensuring seamless continuity.

Strategic Pillars

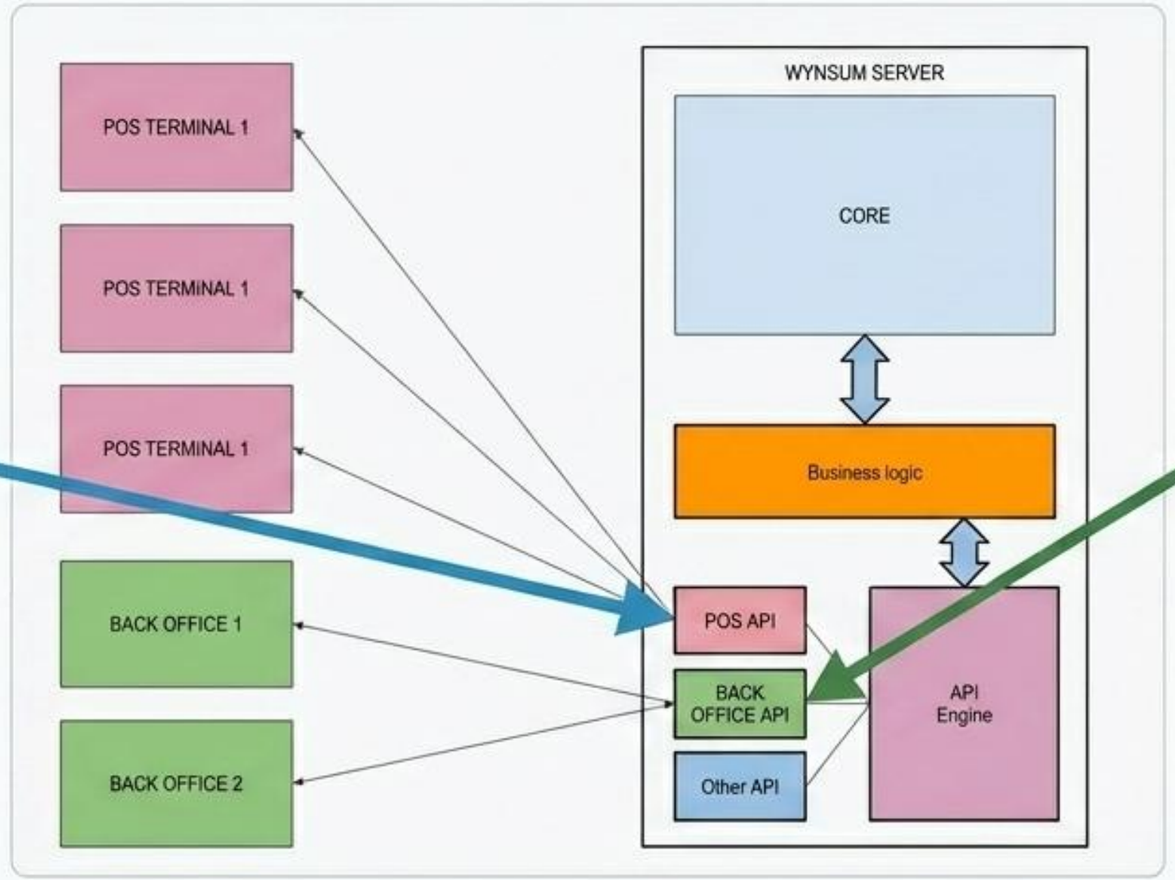
1. Absolute Data Integrity (Zero Trust)

2. Bridging Complexity with Speed

3. Revenue Optimization

The Wynsum Hub Architecture

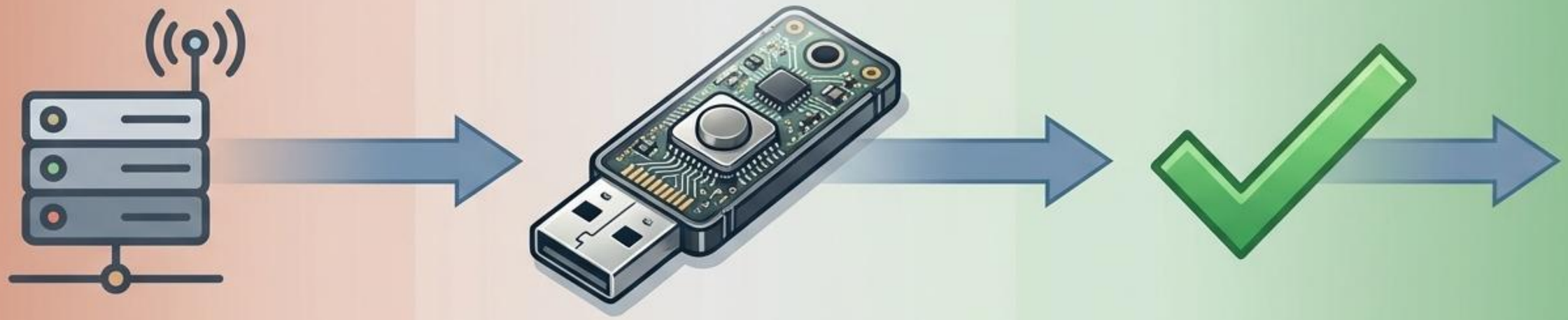
POS API: Persistent WebSocket streams.



Backoffice API: Decoupled REST workflows.

Result: Secure, high-concurrency single source of truth.

Zero Trust Security Layer



Frontend = Compromised Environment

Server Challenge ➔ Non-Exportable Hardware Key

➔ ECDSA Cryptographic Handshake

Live Demonstration

Hardware Authentication Phase

Validating physical terminal integrity...

Live Demonstration

Universal Infinite List:

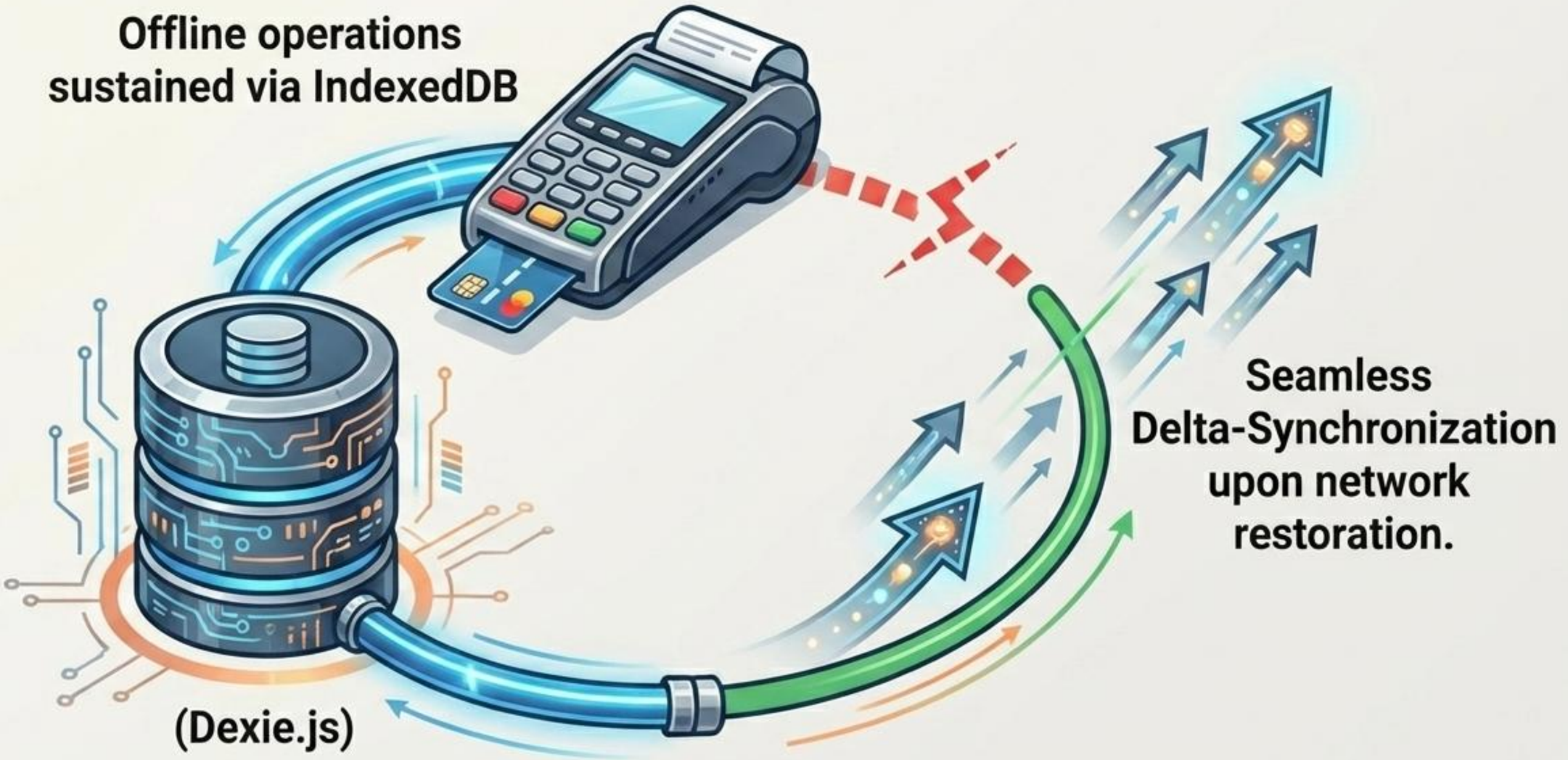
10,000+ items @ 50-60 FPS.

High-Performance Operations

<5ms

API Latency: ~ 5ms.

Connectivity Resilience



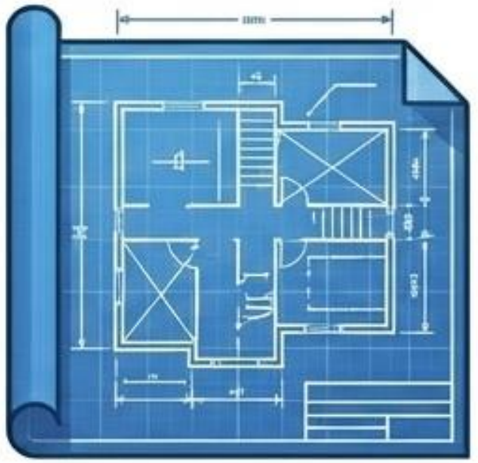
Agile Methodology

Managed via 7 strict Agile Sprints.

Supervisor interventions successfully mitigated architectural risks.

Generative AI Disclosure

Gemini:
Strategic research.



NotebookLM:
Structural planning.

Grammarly:
Linguistic refinement.

Declaration: All software development, business logic, and code are strictly original.

Reflection & Resolution

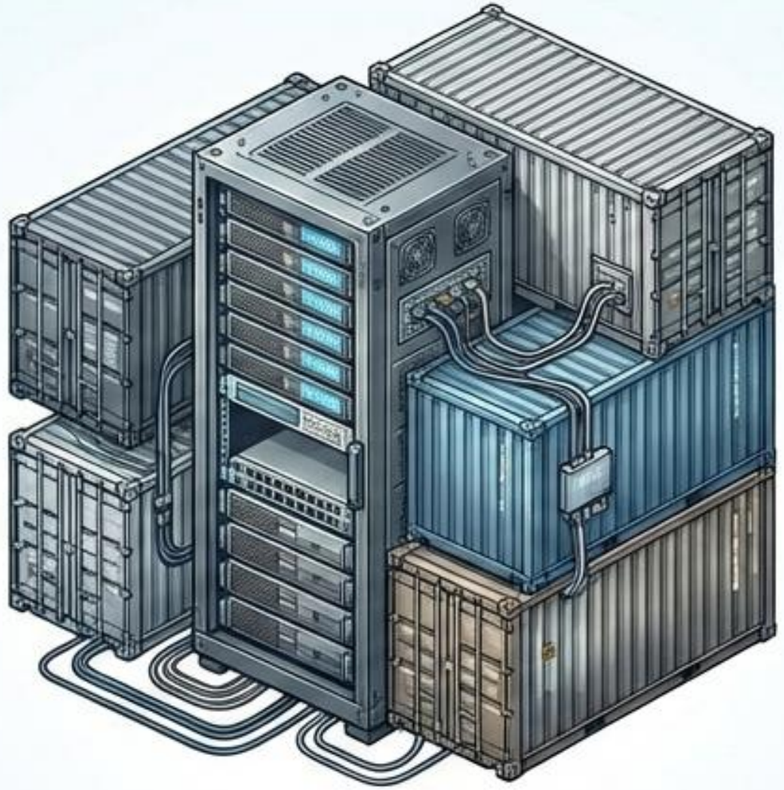
BEFORE

Resolved asynchronous
“Transaction Hell”

AFTER

by implementing strict
State Machine architectures.

Conclusion & Future Work



Next Phase: Docker Compose containerization and hardened Wynsum Hub hardware.

Please try the live demo.