BOS – System-Wide Architecture Recap
Golden Path, Scaling & Governance

Official Architecture Doctrine (No-Containers)

1. Golden Path Doctrine

BOS grows by replicating a hardened Golden Image rather than changing business logic or introducing container orchestration. This ensures determinism, auditability, and operational stability.

2. Golden Image Composition

Each Golden Image contains the operating system, BOS runtime, all engines, security hardening, and configuration loaders for country rule packs and pricing logic. All nodes are identical.

3. Horizontal Scaling Model

Scaling is achieved by adding or removing identical VM instances. State is maintained in shared data layers, allowing nodes to be terminated without data loss or behavior change.

4. Multi-Tenant Isolation

BOS uses strict tenant isolation through logical boundaries and cryptographic controls. Users, businesses, and branches are fully isolated. AI operates strictly within tenant scope.

5. Event-Driven Core

All engines communicate through an event-driven architecture. Events provide loose coupling, clear audit trails, and enable future extensibility without redesign.

6. Shared Data & Audit Layer

Critical data such as financial records, tax events, and rule changes are append-only and immutable. Corrections are handled through adjustments rather than silent edits.

7. Country Rule Packs

Country-specific tax, privacy, and data residency rules are implemented as versioned rule packs stored in the database. These can be updated without code changes or redeployment.

8. Failure & Offline Strategy

BOS supports offline-first operation for POS, Workshop, and Restaurant modules. Local queues synchronize automatically once connectivity is restored.

9. Security, Governance & Trust

Role-based access, AI governance, fraud detection, consent management, and evidence retention are enforced globally. Support teams assist processes without modifying user data.

10. Final Architecture Doctrine

BOS is global by architecture, local by law, and neutral by design. It prioritizes simplicity, trust, and longevity over unnecessary complexity.