

Adam Blansett • SENIOR FULL-STACK & AI ENGINEER

<https://adamblansett.com>

Production-Readiness Checklist for Modern Applications

A 27-Point Architectural, Reliability, and Operational Verification Audit

Engineering Context: Software that runs smoothly in preview environments often fails in production under real database concurrency, network partitions, or unexpected load spikes. Use this audit checklist before committing to high-traffic launches, venture fundraising milestones, or major cloud migrations.

SECTION 01 Core Architecture & Code Quality

- ☐ **Decoupled Business Logic:** Domain logic is decoupled from HTTP handlers, framework controllers, and ORM models to allow deterministic testing in isolation.
- ☐ **Strict Environment Configuration:** Zero hardcoded hosts, API credentials, or ports. All environment variables are validated at build/boot time via strict type schemas (Zod, Envalid).
- ☐ **Dead Code & Dependency Pruning:** Obsolete scaffolding packages, test routes, and abandoned trans dependencies are purged from lockfiles.
- ☐ **Compile-Time & Runtime Type Safety:** Inbound API request payloads, query params, and database schemas use strict compile-time types with runtime guards.

SECTION 02 Observability, Logging & Error Telemetry

- ☐ **Centralized Error Tracking:** Sentry (or equivalent) is initialized across both client and server with release version tagging, environment isolation, and uploaded source maps.
- ☐ **Structured JSON Logging:** Server logs emit structured JSON (level, timestamp, message, correlation ID, user ID context) rather than unparsed console strings.
- ☐ **Distributed Correlation IDs:** Incoming requests propagate an X-Request-ID header across downstream microservices and asynchronous message queues.
- ☐ **Dedicated Health Check Endpoints:** Actionable /health endpoints verify database connectivity, cache availability, and queue state without heavy payload overhead.

SECTION 03 Security, Authentication & Secret Governance

- ☐ **Zero Hardcoded Secrets in Git:** Automated secret scanning (GitGuardian, gitleaks) passes cleanly with no private keys, JWT secrets, or DB passwords in history.
- ☐ **Encrypted Secrets Vault:** Production credentials reside in AWS Secrets Manager, Google Secret Manager, or HashiCorp Vault—never in plaintext repo files.
- ☐ **Strict Session Governance:** Auth cookies enforce HttpOnly, Secure, SameSite=Strict/Lax with bounded TTLs and server-side revocation on logout.
- ☐ **Server-Enforced RBAC:** Every mutation and read endpoint enforces authorization checks server-side independently of client-side UI visibility.
- ☐ **Rate Limiting & Abuse Prevention:** Public endpoints (auth, password reset, checkout, LLM completions) enforce IP- or user-scoped rate limiting (Redis leaky bucket / WAF).

SECTION 04 Data Persistence & Migration Reliability

- ☐ **Idempotent Migrations:** Schema changes execute deterministically, handle restarts cleanly, and are pre-verified against staging data snapshots.
- ☐ **Expand-and-Contract Migrations:** Column renames and table alterations follow non-destructive phased deployments to prevent lock contention and downtime.
- ☐ **Connection Pooling Configured:** Database pools (PgBouncer, Prisma Accelerate, AWS RDS Proxy) are sized to avoid thread starvation under traffic spikes.
- ☐ **Automated Backups & PITR Drills:** Daily automated snapshots with point-in-time recovery enabled and documented, verified restore protocols.

SECTION 05 Resilience, Failure Modes & Background Queuing

- ☐ **Bounded External Timeouts:** All downstream HTTP/RPC integrations enforce explicit connection and read timeouts (never unbounded hangs).
- ☐ **Exponential Backoff & Jitter:** Retry policies for third-party APIs use exponential backoff with jitter and hard attempt caps to prevent retry storms.
- ☐ **Idempotent Webhook Processing:** Inbound webhooks verify cryptographic signatures (Stripe, GitHub) and record processed event IDs to prevent duplicate execution.
- ☐ **Dead-Letter Queues (DLQ):** Asynchronous workers (RabbitMQ, SQS, BullMQ) isolate repeatedly failing poison-pill messages into dead-letter queues.

SECTION 06 Deployment Safety & Automated CI/CD

- ☐ **Automated CI Test Gates:** Unit, integration, and typecheck passes must complete before pull requests can merge to main branches.
- ☐ **Deterministic Immutable Artifacts:** Deployments use pinned lockfiles and immutable build artifacts to eliminate environment drift.
- ☐ **One-Click Fast Rollback:** Hosting platform supports instant rollback to the previous immutable release within 2 minutes of an anomaly.

SECTION 07 AI & LLM Production Guardrails

- ☐ **Structured Output Enforcement:** LLM responses parse through strict JSON schemas with fallback error handling rather than assuming raw completions match format expectations.
- ☐ **Token Budget & Latency Caps:** Prompt inputs are bounded and maximum token limits enforced to avoid runaway provider billing and gateway timeouts.
- ☐ **Prompt Regression Benchmarks:** Prompt updates are evaluated against a standardized test harness before promoting new prompts to production.

Need an Objective Codebase & Architecture Audit?

Adam Blansett provides fixed-scope **48-Hour Codebase & Production-Readiness Audits** for founders, CTOs, and engineering teams. Delivered within two business days with zero fluff: an exhaustive diagnostic report, technical debt hotspot map, and a 45-minute live architectural debrief call.

Schedule a Consultation:
<https://adamblansett.com/book/>

Direct Email:
adam@adamblansett.com

Services Catalog:
<https://adamblansett.com/services/>