

Duy Nguyen Khanh

Backend-Heavy Full-Stack Engineer · Mobile VAS · Direct Carrier Billing · Multi-Region Telecom

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PROFESSIONAL SUMMARY

Full-stack engineer with 5+ years building production Mobile VAS, direct carrier billing, and affiliate-marketing platforms. Delivered 25+ payment-gateway integrations across 30+ markets and led refactoring, incident response, and performance work on high-volume async billing pipelines — from Cassandra pagination and JVM concurrency to Next.js App Router and Backend-for-Frontend design.

TECHNICAL SKILLS

Languages: Java, Scala, TypeScript, JavaScript (ES6+)

Backend: Play Framework, Spring Boot, Akka, Netty, Guice, Spring Security, Spring Data JPA / Cassandra, JPA / Hibernate, AspectJ

Frontend: React 15 → 19, Next.js (App Router), Radix UI, Tailwind CSS, TanStack Query / Table, Zod, jQuery, DataTables.js, Service Workers, Webpack

Databases: Apache Cassandra (Phantom DSL, DataStax driver), MySQL, PostgreSQL, Redis

Cloud & DevOps: AWS (SQS, SES v2, Cognito, S3, ECS/Fargate, ECR, Kinesis Firehose, CloudWatch, RDS), Docker, GitHub Actions, GitLab CI/CD, Nginx, Flyway

Architecture: Async / Reactive (CompletionStage, Scala Futures), Event-Driven, Configuration-Driven Services, Layered / Vertical-Slice, Factory + Strategy patterns, Repository pattern, State Machines, BFF

Observability & Testing: AWS CloudWatch (logs), SLF4J / Logback, JUnit 5, Mockito, ScalaTest, Jest, Integration Testing

Domain expertise: Mobile VAS, Direct Carrier Billing (DCB / PSMS), SMS gateways, MSISDN identity, HLR lookup, subscription billing, fraud detection, affiliate / performance marketing, multi-currency payouts

PROFESSIONAL EXPERIENCE

Full-Stack Engineer · eMobi / Adstart Media Feb 2021 — Present

Core Technical Strengths

- **Async / Reactive Backend Engineering** — Java CompletionStage / CompletableFuture, Scala Futures, Spring @Async + ApplicationEventPublisher; non-blocking billing pipelines, fire-and-forget async jobs, and event-driven processing across 5 named thread pools. (7 repos · 28 evidence)
- **Payment Gateway & Telecom Integration** — 25+ carrier-billing, PSMS / DCB, and SMS gateways across 30+ markets; Template Method + Abstract Base + EventType sealed-enum architecture with idempotent DLR state machines and dedup-by-messageId guards. (7 repos · 26 evidence)
- **Refactoring & Legacy Migration** — Monolith → single-responsibility decomposition (~50% service-size reduction), MySQL → PostgreSQL dialect adaptation with Flyway history consolidation, and cross-codebase pattern extraction — all delivered with zero functional regression. (5 repos · 17 evidence)
- **Modern Full-Stack Frontend** — React (15 → 19), Next.js 16 App Router with typed API-client layer per domain, custom-hook CRUD primitive reused across 5 modules, fail-closed pre-render security guard, and Backend-for-Frontend proxy over internal S2S APIs. (4 repos · 31 evidence)

Multi-Region VAS Billing Backend — Java · Play Framework 2.5.16 · Cassandra (DataStax 3.1.4) · Akka · AWS SQS | 415 commits, 722 files

- Solved OOM crashes on the scheduled billing job by migrating to Cassandra driver-level pagination and a non-blocking async v2 endpoint — safely processes unbounded result sets.
- Refactored a monolithic DLR notification service into 3 single-responsibility services, cutting each service ~50% and isolating failure domains.
- Delivered Premium SMS / DCB integrations across 5 telecom markets, with a temporal state machine that enforces operator business-hour billing and auto-reschedules out-of-window messages.

Payment Gateway Integration Platform — Spring Boot 3.4.1 · Java 21 · Gradle · Cassandra (Spring Data) · PostgreSQL · Redis · AWS Kinesis / SQS · Hibernate Envers

- Delivered 8+ payment-gateway integrations on a Spring Boot 3 / Java 21 multi-module monorepo — each gateway isolated as a vertical slice with Factory-pattern session routing.
- Built a Click-to-SMS attribution system linking landing-page clicks to activated subscriptions — Redis-deduped tracking codes, async event pipeline, and retry-safe outbound tracking callbacks.
- Led a MySQL → PostgreSQL migration for the S2S module with zero functional regression; added a thread-safe vendor-token cache and a hierarchical daily-cap validator (service → offer → affiliate).

- Polyglot persistence across PostgreSQL, Cassandra, and Redis with Hibernate Envers audit trail and event-driven async processing on 5 named thread pools.

Affiliate Operations Dashboard — *Next.js 16 (App Router) · TypeScript · Radix UI · Tailwind CSS 4 · TanStack Query · Zod*

- Bootstrapped a Next.js 16 App Router dashboard with a typed API-client layer per domain (Zod + TanStack Query) for compile-time contract safety and domain-scoped cache invalidation.
- Designed a custom-hook CRUD form primitive reused across 5 modules — unified validation, save, and cache-invalidation UX.
- Implemented a fail-closed pre-render security guard and a Backend-for-Frontend proxy over an internal S2S REST API.

Campaign & Partner Admin Console — *React · TypeScript · Radix UI · TanStack Query*

- Executed a phased fixture-to-live API migration behind feature toggles, then removed ~28k lines of stale sample data without breaking in-flight UI.
- Extracted a shared validator + SaveReasonDialog component reused across 4 CRUD modules to keep audit/compliance behaviour identical.
- Diagnosed and fixed a midnight (1440-minute) time-boundary bug in a shared time-picker used across config tabs.

Multi-Tenant Landing Page Platform — *Vanilla JS (ES6 modules) · Service Worker PWA · WordPress · GTranslate*

- Authored 2,702 commits (11.8%, 3rd-highest contributor) on a 22,860-commit multi-tenant platform (30+ markets, 15+ services). Built a modular ES6 API-gateway abstraction, a Service Worker PWA for push campaigns, and layered session-storage caching.

Financial Payout & Invoice Service — *Spring Boot 3.4.1 · Java 21 · JPA / Hibernate Envers · JasperReports · AWS S3 / SES*

- Delivered end-to-end Billing, Invoice, PaymentMethod, and affiliate-network sync with international wire-transfer + cryptocurrency-payout integrations, plus AWS SES v2 transactional email and AWS Cognito identity propagation.
- Specification-pattern JPA query layer, Hibernate Envers audit trail, and JasperReports PDF invoice generation to S3.

Payment Webhook Receiver Service — *Scala 2.11 · Play Framework 2.6 · Phantom DSL · Cassandra*

- Integrated MSISDN + PIN DCB and 5+ additional payment gateways under a shared Template Method receiver pipeline with an idempotent DLR state machine and materialized-view-backed time-range queries.

EDUCATION & CERTIFICATIONS

BSc, Information Technology · HCM University of Science · GPA 7.1 / 10 · 2017 — 2020

AWS Certified Cloud Practitioner · Amazon Web Services · 2023 · [verify](#)