

Phase 2 — Backend Modules

Phase 2 — Backend Modules

Status: ☐ Complete
Completion Date: 2026-04-17
Lead: Petter Graff (CodeCraft)
Evidence: 20 modules, 22 migrations, 617 tests passing

Overview

Phase 2 implements 20 backend modules in Kotlin/Ktor, replacing the original Hono/TypeScript prototype.

Modules Ported (20)

Module	Purpose	Routes	Tests
health	Health check	GET /health	2
auth	Phone OTP auth	POST /v1/auth/request-otp, POST /v1/auth/verify-otp	12
user	User CRUD	GET /v1/users/me, PATCH /v1/users/me	8
transactions	Transaction history	GET /v1/transactions, GET /v1/transactions/{id}	24
recipients	Recipient management	GET /v1/recipients, POST /v1/recipients, DELETE /v1/recipients/{id}	18
merchants	Merchant accounts	GET /v1/merchants, POST /v1/merchants/register	10
accounts	Linked bank accounts	GET /v1/accounts, POST /v1/accounts/link	14
ips	NBS IPS integration	POST /v1/ips/initiate, GET /v1/ips/status/{id}	22
kyc	KYC sessions	POST /v1/kyc/start, POST /v1/kyc/upload	16

Module	Purpose	Routes	Tests
aml	AML flag checks	POST /v1/aml/check (internal)	8
disclosure	ZZPL disclosure	GET /v1/disclosure/statement	4
complaints	Complaints handling	POST /v1/complaints, GET /v1/complaints/{id}	6
idempotency	Idempotency check	Middleware (all POST routes)	10
rates	Exchange rates	GET /v1/rates/{from}/{to}	5
notifications	Push/email/SMS	POST /v1/notifications/send (internal)	12
audit	Audit logging	AuditLogger.kt (all sensitive actions)	6
metrics	Prometheus metrics	GET /metrics	3
webhooks	Webhook delivery	POST /v1/webhooks/register , POST /v1/webhooks/test	8
cron	Scheduled jobs	Background tasks (not HTTP)	4
admin	Admin panel	GET /v1/admin/users, POST /v1/admin/users/{id}/suspend	15
reports	Reporting	GET /v1/reports/transactions, GET /v1/reports/aml	8
consents	User consents	GET /v1/consents, POST /v1/consents/accept	6
settings	App settings	GET /v1/settings, PATCH /v1/settings	4
openapi	OpenAPI spec	GET /openapi.json	2
withdrawal	Withdrawal requests	POST /v1/withdrawals, GET /v1/withdrawals/{id}	10
cards	Card scaffold	GET /v1/cards (stub, Phase 2)	2
disputes	Dispute handling	POST /v1/disputes, GET /v1/disputes/{id}	8
dataaccess	ZZPL data export	POST /v1/dataaccess/request, GET /v1/dataaccess/{id}	6
sms	SMS sending	SmsService.kt (internal, Twilio)	4
flags	Feature flags	GET /v1/flags	2

Total: 30 modules (20 production, 10 support)

Total Tests: 617 (79 test files)

Database Migrations (22)

Migration	Summary
V1__init.sql	users, phone_verifications, recipients, transactions, nbs_ips_logs, merchants, settings
V2__nbs_ips_logs_iso20022.sql	Add ISO 20022 fields (xml_request, xml_response)
V3__linked_accounts.sql	linked_accounts table (bank account linking)
V4__transaction_idempotency.sql	Add idempotency_key_hash column
V5__kyc_sessions.sql	kyc_sessions table (document upload, verification status)
V6__users_jmbg.sql	Add jmbg_encrypted, jmbg_hash columns to users
V7__aml_flags.sql	aml_flags table (sanctions screening)
V8__disclosure_acknowledged.sql	Add disclosure_acknowledged_at to users
V9__complaints.sql	complaints table (user complaints tracking)
V10__phone_verifications_max_attempts.sql	Add max_attempts column (default 5)
V11__audit_log.sql	audit_log table (all sensitive actions)
V12__data_access_requests.sql	data_access_requests table (ZZPL export)
V13__recipients_enhanced.sql	Add iban, country columns to recipients
V14__merchants.sql	merchants table enhancements (business_name, pib, qr_hmac_key)
V15__exchange_rates.sql	exchange_rates table (RSD/EUR/USD)
V16__notifications.sql	notifications table (push, email, SMS logs)
V17__webhook_deliveries.sql	webhook_deliveries table (delivery attempts, status)
V18__user_consent.sql	user_consent table (ZZPL consent tracking)
V19__feature_flags.sql	feature_flags table (A/B testing, rollout)
V20__withdrawal_requests.sql	withdrawal_requests table (bank transfer out)
V21__cards_scaffold.sql	cards table (stub for Phase 2)
V22__disputes.sql	disputes table (transaction disputes, chargebacks)

Total: 22 migrations (570 lines of SQL)

Dependency Injection (Koin 4.0.2)

File: backend/src/main/kotlin/no/alai/dropsrbija/plugins/DI.kt

Pattern: Constructor injection via Koin modules

Example:

```
val appModule = module {
    single<Database> { Database.connect(/* HikariCP config */) }
    single<JwtService> { JwtService(getProperty("JWT_SECRET")) }
    single<PhoneOtpService> { PhoneOtpService(get(), get()) }
    single<TransactionService> { TransactionService(get(), get()) }
    single<NbsIpsService> { NbsIpsService(get()) }
    single<AuditLogger> { AuditLogger(get()) }
}

fun Application.configureDI() {
    install(Koin) {
        slf4jLogger()
        modules(appModule)
    }
}
```

Services Injected: 28 (all modules)

Ktor Plugin Ordering

File: backend/src/main/kotlin/no/alai/dropsrbija/Application.kt

Order matters (e.g., Database before Routing, Auth before protected routes):

```
fun Application.module() {
    // 1. Core infrastructure
    configureEnvGuard()      // Fail fast on missing env vars
    configureDI()            // Dependency injection
    configureDatabase()      // PostgreSQL connection

    // 2. Observability
    configureOpenTelemetry() // Distributed tracing
    configureSentry()        // Error tracking
    configureMetrics()       // Prometheus metrics
}
```

```
// 3. Security
configureCORS()           // CORS headers
configureRateLimit()      // Rate limiting (Redis)
configureAuthentication() // JWT validation

// 4. HTTP
configureSerialization() // JSON (kotlinx.serialization)
configureStatusPages()   // Error handling

// 5. Application
configureRouting()        // All route modules
}
```

Test Coverage (52%)

JaCoCo Report:

- **Total Coverage:** 52% (gate threshold)
- **Unit Tests:** 617 passing (79 files)
- **Integration Tests:** 11 passing (Testcontainers PostgreSQL)
- **Coverage Gate:** `./gradlew jacocoTestCoverageVerification` (passes)

Why 52% (not 60%)?

- **docker-java issue:** Testcontainers hangs on M-series Macs in CI
- **Workaround:** Disabled integration tests in CI, unit-only coverage gate
- **Fix pending:** docker-java PR (expected Q3 2026)
- **Target:** 60% once integration tests re-enabled

Decision: D12 (CEO approved 52% gate as temporary)

Evidence Matrix

Deliverable	Evidence Type	Status
20 modules	File count (<code>backend/src/main/kotlin/no/alai/dropsr bija/modules/</code>)	☐ 30 dirs (20 prod)
22 migrations	File count (<code>backend/src/main/resources/db/migratio n/</code>)	☐ 22 files

Deliverable	Evidence Type	Status
617 tests	<code>./gradlew test</code> output	✅ 617 passing
52% coverage	JaCoCo report	✅ 52.1% (gate passes)
Koin DI	<code>DI.kt</code> exists	✅ 28 services injected
Plugin ordering	<code>Application.kt</code>	✅ Correct order

Lead: Petter Graff (CodeCraft)
Validation: Angie Jones (Proveo)
Commit Range: `develop` branch

Revision #1
Created 2026-07-29 00:35:56 UTC by John
Updated 2026-07-29 00:35:56 UTC by John