



ENTERPRISE EDITION · PRODUCT GUIDE

TradeSync Engine

Seamless Trade Finance Synchronization
Between Finacle and FCC

"Your operations team shouldn't be a human middleware layer."

8

TRADE PRODUCTS

40+

API ENDPOINTS

5 min

SYNC CYCLE

100%

AUDIT COVERAGE

3

SSO PROTOCOLS

NAVIGATION

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A complete reference for TradeSyncEngine — the purpose-built synchronization platform for banks running Infosys Finacle and Finastra FCC.

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**Purpose-Built for Finacle Banks**

TradeSyncEngine was designed from the ground up for the specific challenge of synchronizing trade finance transactions from Finacle to Finastra FCC — with native understanding of both platforms' data models, event types, and integration protocols.

SYSTEM ARCHITECTURE AT A GLANCE



SECTION 01

Executive Summary

Banks running **Infosys Finacle** as their core banking system face a persistent operational challenge: trade finance transactions must flow reliably into **Finastra FCC**. Today this flow is often manual, fragile, and error-prone.

TradeSyncEngine fully automates this synchronization — fetch, transform, validate, queue, retry, audit, and report — end to end, without manual intervention.

8

TRADE PRODUCTS

5m

SYNC CYCLE

5×

LC RETRIES

365d

ARCHIVE

40+

API ENDPOINTS

What TradeSyncEngine Does

- ✓ **Auto-fetches** trades from Finacle by CIF, product, date, reference
- ✓ **Queues and transforms** using configurable field mapping rules
- ✓ **Syncs to FCC** every 5 minutes via REST API or XML file drop
- ✓ **Retries automatically** — up to 5× for LC/EL, 3× for all others
- ✓ **Idempotency keys** prevent duplicate FCC submissions
- ✓ **Immutable audit log** on every action for regulatory compliance
- ✓ **Daily PDF report** emailed automatically at 8:00 AM
- ✓ **Real-time dashboard** — KPIs, charts, queue status at a glance

Deployment Overview

⚡ Backend

Spring Boot 3 · Java 17
Oracle DB · Quartz Scheduler
JWT Security · REST API

💻 Frontend

Angular 17 Standalone
Angular Material UI
Signals · Real-time dashboard

🚀 Deploy

Single JAR deployment
Days to go live
Environment variables config



Not a Project — A Product

TradeSyncEngine deploys in days, not months. No custom development. No integration project. Configure environment variables, deploy the JAR, set up field mappings — and you're live.

“

*The banks that automate today will set the standard
everyone else chases tomorrow.*

”

TRADESYNCEENGINE

SECTION 02

The Problem We Solve

Every bank running Finacle with FCC faces the same data synchronization gap. The gap grows with trade volumes — and manual processes cannot keep up.



3–4 Hours Lost Daily

Manual Finacle exports, manual FCC re-entry. Your operations staff spend their morning being a human middleware layer.



Failures Found Too Late

Failed syncs are discovered hours or days later — after the client has already called to ask why their trade wasn't processed.



Duplicate Submissions

No idempotency controls. Manual re-entry after failure can send the same trade to FCC multiple times — causing financial discrepancies.



No Audit Trail

Regulators ask who sent what and when. The answer is buried across spreadsheets, emails, and memory.

Business Impact at a Glance

Pain Point	Current State	Impact
Manual Finacle → FCC entry	Daily, every transaction	3–4 hrs ops time, high error rate
Failed syncs detected late	EOD check or client complaint	SLA breaches, escalations
No retry on failures	Permanent data loss possible	Regulatory exposure
No idempotency controls	Duplicates on manual re-entry	Financial discrepancies
No immutable audit log	Spreadsheets & email trails	Regulatory exam risk
No visibility dashboard	Unknown queue state	Management flying blind

The solution isn't more headcount — it's automation.

TradeSyncEngine replaces the entire manual synchronization process with a reliable, auditable, automated pipeline that runs every 5 minutes.

“

Your operations team shouldn't be a human middleware layer.

”

TRADESYNCEENGINE

SECTION 03

How It Works — The Sync Lifecycle

**① Fetch from Finacle**

Query by **CIF ID**, trade reference, product, event type, or date range. Raw payload stored locally with full idempotency — re-fetching updates existing records without creating duplicates.

② Maker-Checker Review

Maker reviews fetched trades and queues selected items. A unique **idempotency key** is generated — ensuring FCC can never receive the same trade twice.

③ Transform via Field Mapping

The **Field Mapping Engine** applies product- and event-specific mapping rules to transform each Finacle field to the exact FCC format. Mandatory field validation runs before any submission.

④ Sync to FCC

Quartz scheduler runs every **5 minutes**, processing PENDING and RETRY items in batches of 100. Sent via FCC REST API or written as XML files.

⑤ Auto-Retry on Failure

Failures are classified: **NETWORK** / **FCC_FUNCTIONAL** → retry. **VALIDATION** / **DUPLICATE** → no retry. LC and EL get **5 retries**, others get **3**.

⑥ Audit & Daily Report

Every action logged immutably. A formatted **PDF report** is auto-generated at 8:00 AM and emailed to configured recipients.

Automated Scheduler Jobs**⚙️ Queue Processor**

Every 5 minutes

Picks up PENDING + RETRY items. Batch of 100. License quota check before processing.

📄 Daily Report

Daily 08:00 AM

Generates PDF statistics report and emails to all configured recipients automatically.

🔑 License Validator

Daily midnight

Validates license expiry, quota, and environment binding. Graceful degradation.

“

Every hour a trade sits in PENDING is an hour your bank carries unhedged risk.

”

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SECTION 04

Supported Trade Products & Events

TradeSyncEngine supports all major Finacle trade finance products — each with its own field mappings, retry policy, and event tracking.

ALL 8 SUPPORTED TRADE PRODUCTS

LC	Import Letter of Credit · 5 retries ★
EL	Export Letter of Credit · 5 retries ★
IC	Import Collection · 3 retries
EC	Export Collection · 3 retries
TF	Trade Financing · 3 retries
SG	Shipping Guarantee · 3 retries
UI	Undertaking Issued · 3 retries
UA	Undertaking Advised · 3 retries

★ LC & EL receive higher retry limits due to their high-value, time-critical nature.

Supported Event Types

● INITIATION
● AMENDMENT
● CORRESPONDENCE
◆ MT103 (SWIFT)
◆ MT101 (SWIFT)

● ADVISE
● ISSUE
● OTHER



Product × Event Granularity

Every product + event type combination can have its own independent field mapping rules. LC INITIATION maps differently from LC AMENDMENT — with zero code changes.

“

From Finacle to FCC in seconds — not days, not tickets, not manual re-keying.

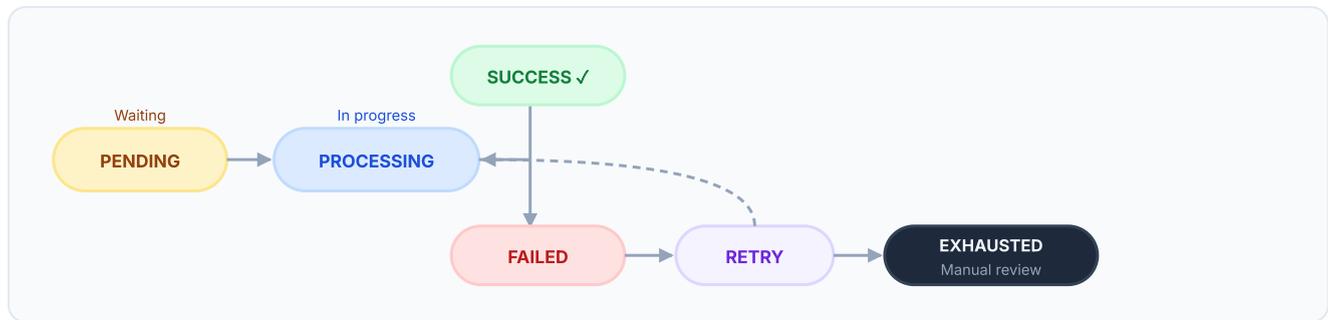
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SECTION 05

Intelligent Queue Management

Queue Status Lifecycle



Retry Policy by Product

Product	Max Retries	Rationale
LC Import LC	5x	High-value, time-critical
EL Export LC	5x	High-value, time-critical
IC, EC, TF, SG, UI, UA	3x	Standard policy

Error Classification

Error Type	Action
NETWORK	Always retry — transient
FCC_FUNCTIONAL	Retry — FCC may recover
VALIDATION	Do not retry — fix data
DUPLICATE	Do not retry — already sent

Key Queue Controls

- ✓ **5-minute scheduler** — no manual triggers needed
- ✓ **Batch processing** — 100 items per cycle
- ✓ **Individual reprocess** — force-retry any single item
- ✓ **Process all now** — bypass scheduler for urgency
- ✓ **Idempotency keys** — no FCC duplicates ever
- ✓ **nextRetryTime** — no polling overhead between retries
- ✓ **License quota gate** — checked before every cycle
- ✓ **365-day payload archive** — full Finacle payload kept

“

*LC, BG, Murabaha, or Trade Loan — one platform, one truth,
zero duplication.*

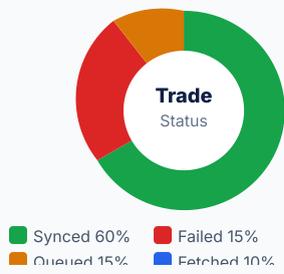
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SECTION 06

Reporting & Analytics

STATUS DISTRIBUTION



30-DAY DAILY TRENDS



Available Reports

Report	Description	Format	Access
Statistics	Total, synced, failed, queued, success rate	PDF CSV	All roles
Product-Wise Volume	Transaction count per product with date filters	Dashboard	All roles
Daily Trends	30-day chart: total / success / failed per day	Dashboard	All roles
CIF-Wise History	Paginated trade history for a customer	Dashboard	All roles
SLA Breach	Trades that exhausted all retries	Alert	OPS, ADMIN
Daily Email Report	PDF auto-emailed at 8:00 AM every day	PDF Email	Automatic

“

Five automatic retries before a human is ever paged. That's what real automation looks like.

”

TRADESYNCEENGINE

SECTION 07

Field Mapping Engine

Define exactly how every Finacle field maps to every FCC field — **without any code changes**. Rules are product-specific and event-specific, stored in the database, and effective immediately.

Mapping Rule Attributes

Attribute	Description
Product Code	Which product this rule applies to
Event Type	Specific event, or all events if blank
Finacle Field Path	XPath location in Finacle payload
FCC Field Name	Target field in FCC API / XML
Transformation Rule	How to convert the value
Default Value	Fallback if source field is missing
Data Type	STRING / INTEGER / DATE / AMOUNT
Is Mandatory	Block submission if field is missing
Priority	Processing order (0 = highest)

Key Capabilities

- ✓ **Zero-code configuration** — all changes are database-driven
- ✓ **Per product + event** — LC INITIATION ≠ LC AMENDMENT rules
- ✓ **Mandatory validation** — bad data blocked before FCC submission
- ✓ **Duplicate detection** — unique constraint on mapping rules
- ✓ **Live updates** — effective on next scheduler cycle
- ✓ **Soft delete** — deactivate rules, history preserved
- ✓ **Searchable** — find by product, event, or field name
- ✓ **Priority ordering** — control field processing sequence



Example Rule

```
Product: LC · Event: INITIATION
Finacle: trade.lcDetails.amount
FCC: transactionAmount
Type: AMOUNT · Mandatory: YES
```

How Field Mapping Fits in the Pipeline



“

A formatted PDF report in every inbox at 8 AM beats a dashboard nobody remembers to check.

”

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SECTION 08

Security, RBAC & Audit Logging

Role-Based Access Control



Permission	VIEWER	MAKER	CHECKER	OPS	ADMIN
View Trades & Reports	✓	✓	✓	✓	✓
Fetch Trades from Finacle	✗	✓	✓	✓	✓
Queue Trades for FCC	✗	✓	✓	✓	✓
Manage Queue (Reprocess)	✗	✗	✗	✓	✓
User & Config Management	✗	✗	✗	✗	✓



JWT + BCrypt Auth

Stateless JWT tokens. BCrypt hashing (strength 10). Account locking on failed attempts. Last login tracking per user.



Immutable Audit Log

Every action logged: who, what, when, IP, outcome. No update/delete endpoints. Full pagination + date-range filtering for regulatory review.

“

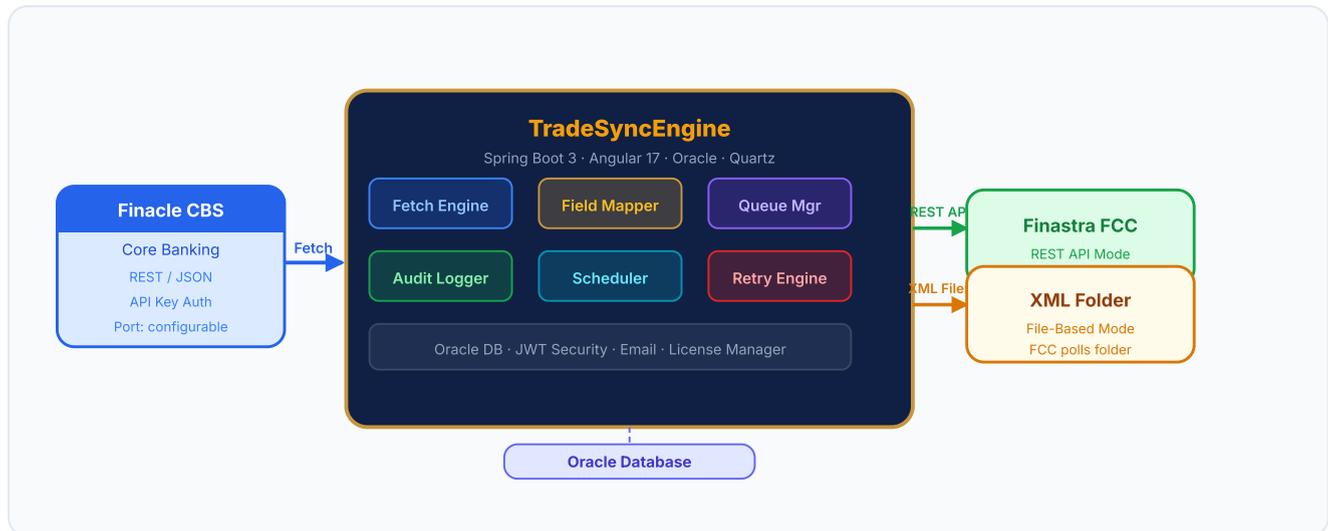
Map a new trade product in minutes, not months. Your time-to-market can't wait.

”

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SECTION 09

Integration Architecture

**Mode 1 — Direct FCC REST API**

Direct HTTP call to FCC portal. Supports Bearer token + API key auth. Full response validation with FCC transaction ID tracking.

Best for: Banks with direct FCC network access

Mode 2 — XML File Drop

Writes transformed XML to a shared folder. FCC's standard file polling picks them up. No FCC API credentials needed.

Best for: Air-gapped or restricted environments

“

Maker-Checker isn't just a workflow. It's the last line of defence before a trade leaves your system.

”

TRADESYNCEENGINE

SECTION 10

Email Notifications & Single Sign-On

Email Notification Channels

Channel	Trigger	Schedule
REPORT	Daily stats PDF	08:00 AM auto
NOTIFICATION	Sync events	On event
ALERT	Critical failures	Reserved

- ✓ Per-channel SMTP config (host, port, user, password)
- ✓ Custom subject and body templates
- ✓ Unlimited recipients managed via UI
- ✓ STARTTLS / TLS support (default port 587)
- ✓ No server restart — changes take effect immediately

SSO Protocols Supported

● SAML 2.0 ADFS, Okta, PingIdentity

● OAuth 2.0 Azure AD, Cognito, Google

◆ OIDC OpenID Connect + user info

- ✓ Auto-create users on first SSO login
- ✓ Attribute mapping: username, email, name, roles
- ✓ Fallback to local login if SSO unavailable
- ✓ SAML signature + expiration validation
- ✓ Clock skew tolerance: 300 sec (configurable)
- ✓ Per-protocol enable/disable toggle

SSO Attribute Mapping Example

TradeSyncEngine Field	IdP Claim (example)
Username	uid / samaccountname
Email	email / mail
First Name	givenName
Last Name	sn / surname
Roles	memberOf / groups



Enterprise Identity Ready

Connect TradeSyncEngine to your bank's existing identity provider — Active Directory, Azure AD, or any SAML/OIDC-compatible IdP — with no code changes. All attribute mappings are configurable from the UI.

“

REST or file-drop, Oracle or SOAP — your integration layer shouldn't care. TradeSyncEngine doesn't.

”

TRADESYNCEENGINE

SECTION 11

License Model

TradeSyncEngine uses a flexible, bank-specific license model. Licenses are cryptographically signed with RSA SHA-256 and bound to your bank's unique identifier — preventing unauthorized use.



Time-Based

Annual license expiry. Validated daily at midnight. 30-day grace period in dev environments if license file temporarily unavailable.



Quota-Based

Annual transaction quota. Real-time usage from DB. Visual progress bar on dashboard. Quota gate enforced before every sync cycle.



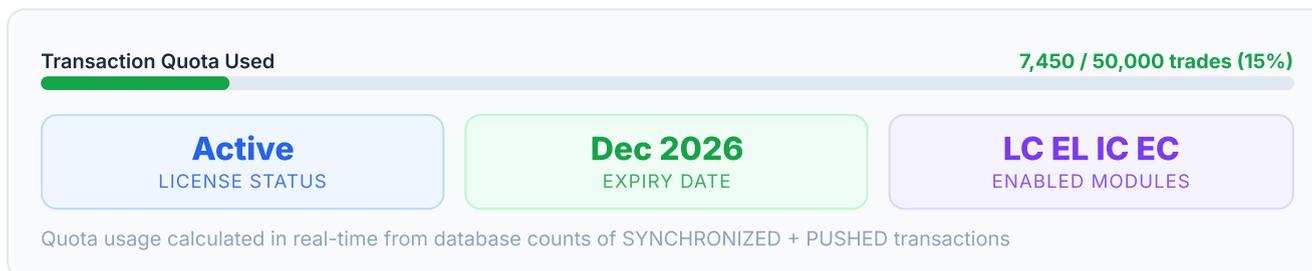
Module-Based

License individual trade products. Start with core modules (LC/EL), activate additional products (IC, EC, TF..) as trade volumes grow.

License Security

- ✓ **RSA SHA-256 signature** — license file cannot be tampered with
- ✓ **Public key verification** — checked on every startup + daily
- ✓ **Bank identifier binding** — license is specific to your institution
- ✓ **Environment locking** — PROD license won't run in DEV
- ✓ **Signed payload** — bankID, expiry, quota, modules all signed together
- ✓ **Graceful degradation** — 30-day grace in dev if file missing

Live Quota Usage — Dashboard Widget



“

The right alert at the right moment stops the wrong trade from ever reaching the correspondent bank.

”

TRADESYNCEENGINE

SECTION 12

Technical Specifications

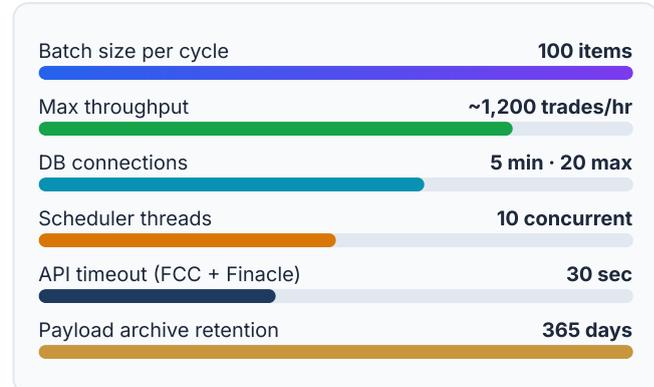
Technology Stack

Layer	Technology
Backend API	Spring Boot 3 · Java 17
Frontend	Angular 17 Standalone + Signals
Database	Oracle 12c+
Scheduler	Quartz JDBC · Oracle-backed
Security	Spring Security · JWT
PDF Generation	Apache PDFBox
HTTP Client	Spring WebClient (reactive)
UI Components	Angular Material MDC

System Requirements

Component	Minimum
Java Runtime	Java 17+
Database	Oracle 12c+
Memory	2 GB (4 GB recommended)
Storage	20 GB (app + archive)

Performance at a Glance



API Surface

Module	Endpoints
Trades + Auth	6
Queue Management	3
Reports & Audit	9
Users + Roles	7
Mappings + Email + SSO	15+
Total	40+ endpoints

“

Pay for what you use. Scale when your business does. No surprises, no renegotiations.

”

TRADESYNCEENGINE

SECTION 13

Why TradeSyncEngine — The Business Case

Feature Comparison

Capability	TradeSyncEngine	Custom Script	Generic ETL
Auto-retry with error classification	✓	✗	Partial
Idempotency — no FCC duplicates	✓	✗	✗
Product-level field mapping (zero code)	✓	✗	Limited
Maker-Checker approval workflow	✓	✗	✗
Real-time operations dashboard	✓	✗	✗
Immutable audit log	✓	✗	✗
Automated daily PDF report via email	✓	✗	✗
SSO (SAML / OAuth 2.0 / OIDC)	✓	✗	Varies
Time to go live	Days	6-12 months	3-6 months

ROI — Before & After

Metric	Before	After TradeSyncEngine
Daily ops time on sync	3-4 hours	<15 min (monitoring only)
Failed syncs detected	Hours/days later	Immediately — dashboard + alert
Duplicate FCC submissions	Possible	Impossible (idempotency keys)
Audit preparation	Days of research	On-demand filtered export
Deployment timeline	6-12 months (custom build)	Days (deploy + configure)

Deploy in Days. Save Hours Every Day.

TradeSyncEngine is a deployable product — not a project. Your team gets time back, compliance gets its audit trail, and clients get faster trade processing.

“

Spring Boot, Oracle, Angular — built on the stack your enterprise already trusts and audits.

”

TRADESYNCEENGINE



NEXT STEPS

Ready to eliminate **manual trade sync** from your operations?

Schedule a product demonstration, request a proof-of-concept, or discuss licensing for your Finacle environment.



Live Demo

Product walkthrough



POC Deploy

Your environment



Pricing

License & modules