

Collateral/Securities Lending Data Warehouse Platform

Client

Leading custodial services and financial management company, which also acts as international securities lending agent. Client's SLD system stores the information about all the broker-dealers, agency-lenders, securities and stocks, loans, earnings and other financial information required for securities lending business.

Challenge

Collateral/Securities Lending is a backend project, serves as data warehouse across US/UK. SLD(Securities Lending Data Warehouse) processes loan and collateral information at the end of business day; SLD processing includes series of validations, transformations, and aggregations to derive the data required to update the SLD loan information. The feeds for Inventory, Loan, Earnings, Security data, Investment, Fund/Group/Account information are loaded into the SLD Data Mart Application from systems like DML, MCH, BRS, SSgA, LCM/NCE etc. Processed data is then used by internal SLD Applications like ALD (Agency lending Disclosure),

STARS (Securities Transaction Automated Risk System) for their calculations and reporting purposes. SLD data is used for Client reporting in the form of SLPR On-Demand and SFIR Scheduled Reports and this data is being sent to various external clients via client feed application at various levels of data granularity. SLID system is a GUI interface for business users to monitor and refine data of different SLD applications. SLD will enable users to:

- Calculate the audited/unaudited earnings for all loan allocations at fund level
- Analyze the non-cash collateral funds
- Use it as a repository for all types of earnings/expenses and income at daily/monthly levels
- Generate daily/monthly reports after the data loads

Solution

Our team participated in full system development life cycle including design, coding, testing, implementation, documentation, application maintenance and support. We performed analysis, developed PL/SQL scripts for complex business requirements and SQL scripting, tuning and optimization (schema and SQL) and data quality issues fixing. Our team developed data access and data load processes throughout the application. We used the following techniques and technologies to provide the Client with required functionality: B-tree, bitmap, function-based indexes creation depending on execution plan analysis; JavaScript/ExtJS(2-4) technology for GUI frontend, starting 2015 we opted for React JS; Java, C++ and XML/XSLT for custom service engine part (data processing, web service).

The system provides users with Jasper-based reports generating on demand. SLD receives feeds from various upstream systems for a given business day. All the feeds are processed through ETL concepts; data is loaded into respective core Oracle tables for further report generation. Loan and earnings data for particular business day is processed through batch process driven by shell scripts.

Result

Our team has been developing and supporting SLD(Securities Lending Data Warehouse) Application for over 7 years.

Securities lending team can access information in SLD for generating daily and monthly reports. Feeds received by SLD from other systems have the data for loans booked, earnings on loans, security level information, investment vehicle, investment pools and borrower details. Users can generate the reports as they require.

Users can easily track trades and settlements and manage their trade risks via SecLending system.

Tools and environment

Subversion: Git; Front-end: JavaScript (ES6, ES7), NodeJS, ReactJS; Package management: WebPack, npm, Grunt; Unit tests: Karma, Jasmine; Documentation: ESDoc; Styles: LESS, BEM-methodology; Data processing: JSON, Web/REST Services; Back-end: Java SE/EE, JDBC, JSP/Servlet; DB: Oracle PL/SQL, Oracle 10g/11g; OS: Linux, Windows.