CASE STUDY: Transaction Hub Modernization: From Legacy Infrastructure to Cloud-Native Architecture

PROBLEM STATEMENT: A leading global financial institution, sought to modernize its centralized transaction routing hub. The transaction hub, a critical internal platform, had been running on legacy infrastructure for over a decade. Rising licensing costs, outdated technology, and a growing need for cloud migration and data security catalyzed the initiative to transition from MarkLogic to Azure Cosmos DB.

OBJECTIVES

Cloud Migration: transition the transaction hub to a secure, scalable Azure cloud first architecture

System Improvement: enhance performance, maintainability, and scalability of the internal transaction hub

Improve Security: by eliminating technical debt tied to outdated software

Enable Agile DevOps Practices: with updated tools and test automation

Cost Optimization: reduce high annual licensing cost associated with MarkLogic

SOLUTION

PROCESS

- Two architects conducted a thorough technical assessment to identify possible migration paths
- Selected a phased Extract Transform Load (ELT) based data migration and application refactor approach
- Extracted data using MarkLogic Content Pump (MLCP) and cleaned JSON files to remove legacy metadata
- Transformed and loaded via Azure Data Factory into Cosmos DB
- Replaced MarkLogic dependencies in the application codebase
- Aligned application architecture and tests with Cosmos DB APIs
- Transitioned all Spring Boot microservices from Java 1.8 to Java 21

DELIVERED

+ Replaced MarkLogic NoSQL with Azure Cosmos DB, enabling multi-region replication, and improved scalability
+ Legacy metadata and non-essential artifacts stripped during migration, resulting in streamlined, JSON format that enhances maintainability, and supports automation
+ Upgraded all Spring Boot services from Java 1.8 to Java 21, which supports long term releases, improves runtime performance
+ Enhanced DevOps alignment due to re-architected application being CI/CD ready and designed for automated testing. Integration and unit tests re-written to support Cosmos DB, paving the way for agile delivery practices and reducing future deployment risks

IMPACT

$880K IN ANNUAL COST SAVINGS
Transaction Hub cost reduction from $1 million/year to less than $120K across 8 applications

FUTURE-PROOF SCALABILITY
Able to handle 4-5X increase in transaction volume over the next 3 years

FASTER TRANSACTION TIME
Lower latency and improve microservice performance and faster transaction processing

AUTOMATED TESTING FRAMEWORK
CI/CD pipelines embedded into architecture, allows faster iterations and safer deployments

ENHANCED SECURITY & COMPLIANCE
Upgrading to Java 21 and adopting Azure native security features improves compliance with modern cyber security standards and industry regulations