



Managed CI/CD Migrations for OpenSearch

SUMMARY

Our client, a top 10 crop insurance company, sought to improve the onboarding experience for new underwriters by creating a scalable, easily accessible knowledge base of regulatory information. The goal was to make this base digestible for new hires while also supporting advanced search capabilities and AI-driven chat interactions. This was achieved by using a generative AI RAG (Retrieval-Augmented Generation) model, powered by OpenSearch for better functionality. Challenges with managing and migrating OpenSearch indexes across various environments, which proved difficult due to the complexities of access permissions and manual effort required for migrations, led to looking for a more robust and repeatable solution for managing OpenSearch indexes in a scalable and automated way.

SOLUTION

The team implemented a versioned migration system using Umzug, a tool that fit naturally into their existing TypeScript ecosystem, and addressed the challenges they were facing. This system automated index migrations, ensuring each environment received only the necessary delta changes during deployment, similar to how database migrations are managed with tools like Flyway or Liquibase. The migration system was also integrated into the CI/CD pipeline, ensuring that OpenSearch index updates occurred automatically before any serverless endpoints, such as AWS Lambda functions, were deployed. To further enhance scalability and simplify migration tracking, the team stored migration states in DynamoDB, leveraging existing AWS infrastructure and SDK to handle the process in a serverless manner. This provided flexibility by allowing migrations to be applied only when necessary, while also making it easier for new developers to understand the evolution of index changes.

RESULTS

100%

OpenSearch indexes
deployed automatically

Seconds

Deployment of
OpenSearch indexes
happens in seconds and
not days

95%

Operating costs
reduced by 95%
compared to off the
shelf solution