

Overview

The COBOL CardDemo Modernization project aims to transform a legacy system

Service Catalog

The following services are part of the COBOL CardDemo Modernization:

1. ****User Management Service****
 - Responsibilities: Login & Navigation, Add User, Update User, List User
 - Owner Team: Identity Management Team
 - SLA: Availability 99.9%, Latency p99 200 ms
 - Primary Datastore: MongoDB (UserDB)
2. ****Account Service****
 - Responsibilities: View and Update Account Information
 - Owner Team: Account Management Team
 - SLA: Availability 99.9%, Latency p99 150 ms
 - Primary Datastore: MongoDB (AccountDB)
3. ****Transaction Service****
 - Responsibilities: List & View Transactions, Add a Transaction, Bill P
 - Owner Team: Transaction Processing Team
 - SLA: Availability 99.9%, Latency p99 300 ms
 - Primary Datastore: MongoDB (TransactionDB)
4. ****Batch Processing Service****
 - Responsibilities: Load Initial Data (Batch), Process Daily/Monthly Ba
 - Owner Team: Batch Operations Team
 - SLA: Availability 99.5%, Latency p99 500 ms
 - Primary Datastore: MongoDB (BatchDB)

Refer to the Service Catalog artifact (ID: 0116a840-224e-4b58-91fc-77e6a4a

APIs

Each service exposes APIs as follows:

- ****User Management Service****
 - Style: REST
 - OpenAPI Specification: [User Management API]([link to OpenAPI specification](#))
- ****Account Information Service****
 - Style: REST
 - OpenAPI Specification: [Account Information API]([link to OpenAPI specification](#))
- ****Transaction Service****
 - Style: REST
 - OpenAPI Specification: [Transaction API]([link to OpenAPI specification](#))
- ****Batch Processing Service****
 - Style: gRPC
 - gRPC IDL: [Batch Processing API]([link to .proto file for Batch Processing](#))

Refer to the API Contracts artifact (ID: c95cb74e-c30b-43b5-96f4-9bb049131

Events

The following events are defined for inter-service communication:

1. ****UserLoggedIn****
 - Producer: AuthenticationService
 - Consumers: AccountService, TransactionService
 - Retention: 30 days
2. ****AccountUpdated****
 - Producer: AccountService
 - Consumers: NotificationService
 - Retention: 30 days
3. ****TransactionAdded****
 - Producer: TransactionService
 - Consumers: ReportingService
 - Retention: 60 days
4. ****BatchProcessed****
 - Producer: BatchProcessingService
 - Consumers: ReportingService
 - Retention: 90 days

Refer to the Event Catalog artifact (ID: c17245ae-cacb-4151-ada0-8e1804ff9

NFRs

The following Non-Functional Requirements (NFRs) are established:

- ****Performance****
 - p99 Latency: ≤ 250 ms in production (ID: 50e58d7b-3e6a-4cab-9135-8b8e4
 - Test Plan: k6, weekly
- ****Reliability****
 - Uptime: $\geq 99.9\%$ in production
 - Test Plan: Chaos testing, monthly
- ****Security****
 - Vulnerability Scan Score: ≥ 90
 - Test Plan: Penetration testing, quarterly
- ****Compliance****
 - Audit Log Completeness: 100%
 - Test Plan: Manual review, bi-annually
- ****Observability****
 - Alert Response Time: ≤ 500 ms in production
 - Test Plan: k6, weekly

Refer to the NFR Matrix artifact (ID: 50e58d7b-3e6a-4cab-9135-8b8e4ea0a513

Topology

The deployment topology consists of three environments: dev, staging, and

- **Development Environment**
 - Cluster: dev-cluster
 - Services: login-service, account-service, transaction-service, batch-p
- **Staging Environment**
 - Cluster: staging-cluster
 - Services: login-service, account-service, transaction-service, batch-p
- **Production Environment**
 - Cluster: prod-cluster
 - Services: login-service, account-service, transaction-service, batch-p

Refer to the Deployment Topology artifact (ID: 51ce8cd2-b0ab-418a-97f2-d67

Observability

Implement observability practices to monitor system health and performance

- Use logging frameworks to capture service logs.
- Set up monitoring tools to track performance metrics and alert on anomal
- Ensure that all services emit metrics compatible with Prometheus and Gra

Refer to the Runbooks & SL0s artifact (ID: 11c4c2b0-b330-4963-812d-2991906

Ops Runbooks

The following runbook outlines operational procedures:

- **Alerts**
 - High error rates in transaction processing
 - Latency spikes in account information retrieval
- **Diagnostics**
 - Check service logs for errors
 - Monitor database performance metrics
 - Review transaction queue lengths
- **Rollback Steps**
 - Revert to the previous stable version of the service
 - Restore the database from the last backup if data integrity is comprom
 - Notify users of service interruption and expected resolution time

Refer to the Runbooks & SL0s artifact (ID: 11c4c2b0-b330-4963-812d-2991906

ADRs

The following Architectural Decision Record (ADR) has been proposed:

- **Saga vs 2PC**
 - Decision: Adopt the Saga pattern for handling transactions across micro
 - Consequences: This will lead to a more flexible architecture that can

Refer to the ADR Index artifact (ID: 4f660557-ebbd-4fec-947f-09a831895a65)