# Implemented data lakehouse for leading telecom client in North America

**Client**
A wireless prepaid telecom service provider with multiple brands

**Company Size**
800+ employees

**Location**
Global with headquarters in North America

**Featured Partners**

aws

snowflake

**The client is a leading telecom company that specializes in no-contract prepaid subscriptions with over 21 million active subscribers in North America. They faced multiple challenges in managing their data infrastructure, ranging from fragmented customer records to delayed data integrations.**

These issues spawned from unintegrated multi-vendor systems, weak loyalty programs causing customer churn, and lack of real-time visibility into customer activity. To address these challenges, we designed and implemented a data lakehouse solution on AWS.

BI & Visualizations

Data Management

Data Migration

Data Warehousing

# The Challenge: A multi-layered operational and technological challenge that needed streamlined processes

**Objective:** Streamline data management processes to enhance customer identification, improve loyalty programs, reduce churn, and prevent business losses from stockouts.

**Existing Issues:** Multiple customer system records in different structures and vendor systems impacted customer identification and caused integration delays.

**Solution Needed:** A unified data platform that consolidates customer records, enhanced data integration, and provided real-time customer insights.

**Outcome:** Implementation of a data lakehouse on AWS provided a single source of truth, reduced churn, improved demand forecasting, and enhanced real-time customer insights.

**The telecom client faced significant operational and technological challenges due to fragmented customer records.** This included delayed data integrations from multi-vendor systems, weak loyalty programs that led to high customer churn, frequent stockouts of devices, and a lack of real-time customer activity insights.

# The Solution: Design and implement a comprehensive data lakehouse

**To address the complex challenges faced by the telecom client, Marlabs designed and implemented a comprehensive data lakehouse solution on AWS.** This solution was executed through a multi-phased approach to ensure seamless integration, real-time data processing, and enhanced data management capabilities. To ensure a structured and efficient implementation, this was done across several phases, shown below:

### Phase 1: Design and Architecture

Our team established a robust foundation for the data lakehouse.

**Workstreams:**

- AWS data lakehouse cloud solution design and architecture
- Reusable ingestion framework development using PySpark and Python

### Phase 2: Real-Time Data Integration

We enabled real-time data processing and activity tracking. Additionally, our team created a comprehensive 360° view of the client's customers with detailed consumption data.

**Workstreams:**

- Data integration from multiple subscriptions
- Implementation of real-time ingestion workloads using Kafka and Kinesis

### Phase 3: Data Management and Compliance

In this phase, we enhanced data management and ensured regulatory compliance.

**Workstreams:**

- Training for data stewards and business users
- Change management and communications
- Ongoing data quality monitoring setup
- MDM governance policy finalization

### Phase 4: Continuous Improvement & Flexibility

By enabling ongoing improvement, we improved flexibility to add new sources of information to the data lake. In this phase, we also ensured adaptability and accessibility of the data infrastructure.

**Workstreams:**

- Future state preparation
- Self-service enablement for leadership
- Decision-making capabilities enhancements

### Services and Technologies Used:

**Services:**

- AWS Infrastructure
- Data Governance
- Self-Service Enablement
- Intelligent Automation

**Technologies:**

- Databricks
- AWS
- Delta Lake
- Python
- PySpark
- ThoughtSpot
- Snowflake
- Redshift
- Terraform
- DataStage

# The Results: Impact on the client organization

**The implementation of the data lakehouse solution brought significant improvements across various aspects of the telecom client's operations.** These outcomes demonstrated the effectiveness of the solution in achieving the project's objectives and addressing the client's challenges. Some of the impacts include:


**360° View of Customers:** We provided a single source of truth for customer data across the enterprise.

**Increased Customer Satisfaction:** This initiative enhanced customer satisfaction and reduced operational requests by approximately 13%.

**Reduced Churn:** New subscription plans reduced churn by approximately 8%.

**Machine Learning Readiness:** We improved model readiness from monthly to bi-weekly.

**Self-Service Capability:** Leadership gained the ability to do self-service on data, which reduced rework immensely.

**Reduced Data Quality Issues:** This work reduced data quality issues by approximately 15%.