Case Study

Saving $0.5Million Per Year for a Global Utility Company

Remediation of Meter Supply Shortage
with Automation

About client

The client is a 135-year-old American utility giant, generating ~3,500 MW power for 900,000 customers across northern and central California. The client experienced a meter supply shortage, resulting in over a 90% reduction in meter volume, with no anticipated recovery date. They needed a software solution to overcome this meter shortage.

The need for change

The client needed a solution to address single-sourced meter inventory concerns. In the aftermath of the pandemic, global supply chain issues caused the current vendor to struggle with supplying the required number of meters. It drove the need for adding a new vendor to help the client tackle this global supply chain issue. Additionally, upgrading the internal system was necessary to make the client more adaptable to change in the future, essentially future-proofing their business for sustainable success.

Challenges

The client faced numerous challenges such as:

- **Supply chain issues:** Due to global supply chain issues post-pandemic, the client was affected by the short supply of automatic metering infrastructure (AMI) meters from their existing vendor. They lacked advanced metering infrastructure.

- **Manual meter read:** Manually reading meter for billing caused the client to spend more on full-time employees (FTEs).

- **Reduced system capability:** Since the client was dependent on one single meter vendor, the existing internal systems were outdated.

- **No analytics:** Their existing system did not have the capability of advanced analytics to report the existing meter data.

LTIMindtree's solution

The client required two phases to overcome the meter supply shortage. In the first phase, they purchased meters from a partner as a short-term solution. In the second phase, the client purchased automatic metering infrastructure (AMI) meters from another partner vendor as a long-term solution and set up a head-end system, thereby reducing manual meter reads. The client collaborated with LTIMindtree to set up the required internal infrastructure using AWS so that the business processes were established for this new type of meter.

Phase 1: Client-driven LTIMindtree solution that mitigated AMI sensus meter deficiency

- Ordered 15,000 AMI meters and integrated them with existing meters.
- Ordered refurbished meters with limited capabilities.
- Avoided manual meter reading for billing.

Phase 2: Recommended and invested in alternate AMI vendor

- Alternate AMI vendor selected and implemented.
- Updated internal system/architecture to enable the business processes that rely on AMI capabilities.

Solution for this project involved:

- Processing of new meter request data on the outage detection API which enabled the client with proactive outage notification with near real-time data notifications from AMI to client systems. It helped the client to identify and process data from multiple source systems.
- Processing the incoming meter data to AMI S3 bucket and upload back to the multi-speak gateway for qualified facility type meters.
- White-listing the IP address to allow the request data coming from the meter head-end system.
- Created lambda to process the meter records, SQS for the event trigger, and SNS and PagerDuty for the sending alert.
- Re-process the failed records and files, tracking the failures on the lambda and notifying the failed transactions though advanced analytics.
- To reduce the Snowflake execution cost, we pulled the data from the Snowflake table on a daily basis and loaded it into DynamoDB.
- Built CloudWatch Dashboard to know the metrics of the lambda invocation.
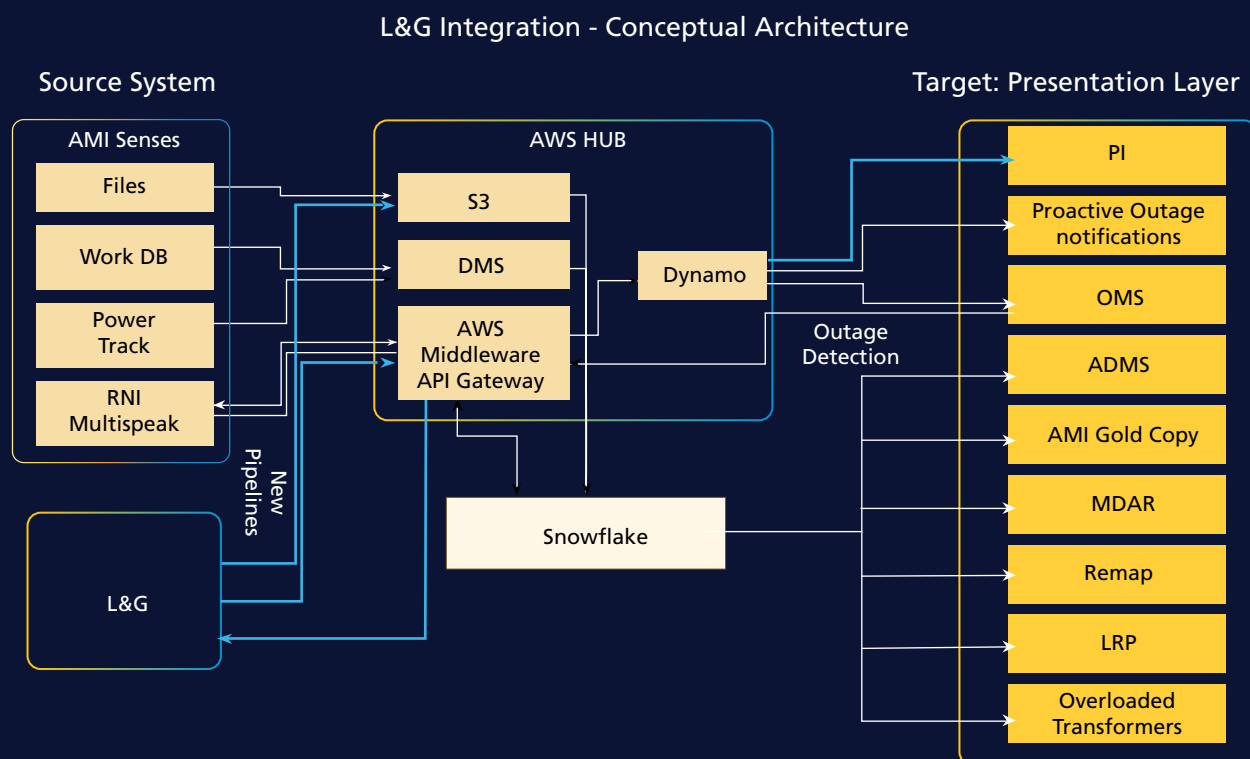
Technical architecture diagram

L&G Integration - Conceptual Architecture

Figure 1: Integration conceptual architecture

Tech stack

Back-end technologies	**AWS Lambda, DynamoDB, SQS, SNS, Matillion, Bit Bucket**
Front-end technologies	**Python, Snowflake, HTML, CSS, Javascript, Jquery**
Database	**SQL Server**
Cloud resources	**Web app, Azure SQL, Key vault, App insights, Azure Active Directory**
DevOps	**CI/CD pipelines, Azure DevOps**

Benefits

The solution helped the client leverage automated processes for their meter readings leading to several benefits including:

Saved **$0.5** million per year

For meter readings by reducing manual effort through advanced metering infrastructure.

50% reduction

In communication challenges for the meters requiring manual billing reads.

- Automation eliminated the need for manual meter readings and enabled greater accuracy.

- Enabled better risk mitigation, reducing potential challenges of supply chain shortages.

- Maintained sufficient AMI inventory for everyday operations enabling better growth and maintenance.

- Served as a second AMI vendor to provide resiliency in the client's meter supply chain.

- Enabled flexible metering via cellular telecons.

- Introduced advanced capabilities to align the client with future goals.

Conclusion

Our solution for the client placed them in the driving seat as an industry frontrunner in this evolving market where automatic meter reads are standardized. It also enabled the client to remove dependency on one single vendor. By upgrading the internal systems, it opened the door for them to quickly change the meter vendor with very minimal changes in the internal system while maintaining the existing AMI business processes. Thus, upgrading with a cloud-first approach that streamlines and automates processes will pave the way for energy and utility companies to stay one step ahead.

Testimonial

> " Great cross-team collaboration. Super happy to see that OMS will get the data from these new meters and that we will be able to send out proactive alerts to all the customers.
>
> Thank YOU, team!!! "
>
> Division Chief Information Officer

> " Congrats and THANK YOU team for the tremendous work! This is a major step in our technology strategy – and drives us forward to supporting our customers and ops teams!
>
> Integrating a full AMI system is no easy feat, and this has been a key priority over the past two years. A job well-done! "
>
> Manager Distributed Device Strategy, Project Sponsor

> " This is a huge milestone in having an alternate AMI vendor to alleviate supply chain issues and avoid manual meter reads. "
>
> Senior Manager Application Development, Project Sponsor

Looking to digitally transform your vendor management and supply chain with a cloud-first approach?

Reach out to us at eugene.comms@ltimindtree.com