

view

CASE STUDY

**Transforming IoT Insights: Neev Systems
Delivers 360-Degree Device Visibility through
Cutting-edge Data Processing and Analytics**



Client
View.inc



Location
Milpitas, CA, USA



Industry
IoT Product
Manufacturing

Client Speaks

"View Inc. has partnered with Neev Systems to implement our Enterprise Data Lake which can host Oracle ERP, SFDC and IoT data to provide an integrated Data Analytics platform. Neev Systems has brought to the table a team of architects and developers who provided a Hybrid EDL architecture with Data Ingestion process powered by Azure Data Factory and Data Lake hosted on Snowflake. IOT data seamlessly ingested into the Data Lake has provided more Operational Insights to the Customer Service Team. Neev Systems collaborative skills and agility are commendable. They helped us translate our business logic and needs into a platform that takes data from many disparate systems and makes it available to all users via a simple but powerful analytics tools. Neev systems expertise in the Data Platform area has helped us to implement our EDL at optimal cost and their Project Delivery model has enabled us to implement our EDL project within stipulated timelines."

Jerry Achord

Director Business Intelligence, View Inc



About the Client

The client is a leading manufacturer of products equipped with IoT devices. These devices send real-time log data, allowing them to gain operational insights, perform log analytics, and efficiently manage maintenance and support. The company's customer support team plays a critical role in ensuring that these IoT devices operate smoothly, providing real-time analytics on device attributes and monitoring log data to maintain exceptional service quality. To enhance customer support and operational efficiency, they aimed to integrate various data sources, including sales orders, opportunities, business locations, and external data from Salesforce and Oracle.



Challenges

The client faced several challenges that needed to be addressed:

Data Variety and Sources: The client had multiple IoT systems and data sources, including API outputs and data hosted in Amazon RDS. These sources produced data in various formats, requiring integration and transformation.

Real-time Analytics: The customer support team required real-time analytics on IoT device attributes and log data, making it necessary to process and analyze incoming data continuously.

Log Data Completeness: It was crucial to identify missing log information for specific time periods and set up alert mechanisms to address potential issues.

Data Integration: To provide comprehensive customer support, the client needed information related to Salesforce (client contacts, location attributes, and addresses) and Oracle (sales orders and shipping information).

Scalability: The solution had to accommodate new IoT devices seamlessly, ensuring that data ingestion was automated without manual intervention.



Solutions

The Neev Systems team implemented a robust data processing and analytics solution. The key components of the solution included:



Data Retrieval:

Data from multiple IoT systems and configurations are collected, including data from private hubs through APIs and application data hosted in Amazon RDS.



Data Transformation:

The data is transformed into a format suitable for analysis and storage in Snowflake's stage tables. JSON data from APIs is extracted and loaded into these tables.



Data Flattening:

The JSON data in the stage tables is flattened using lateral flattening. This means that complex, nested JSON structures are broken down into columns in a flat-view table.



Enriched Layer:

A data modeling process is applied to the flattened data from JSON and other stage tables. This enriched data is then inserted or updated into an Enriched Data Layer within a Data Warehouse.



Consumption Layer:

Based on business requirements and entity relationships established in the enriched layer, views are created to provide specific data sets for consumption, reporting, and analytics.



Analytics:

Alerts, data visualizations, metrics, and log analytics are built using various data platform tools such as Splunk, Power BI, and Snowsight.



Metadata-Driven Approach:

The entire process is driven by metadata, which means that adding a new IoT device to the network can be easily accommodated by adding it to the existing framework, and it will automatically become part of the data ingestion process.



Data Orchestration and Monitoring:

Use ADF pipelines for data orchestration and maintain log tables for tracking errors and statistics.



Alerting Mechanism:

Establish a robust alerting system to respond to failures, maintenance issues, and service problems based on log data.



Integrated Data Mart:

Create an integrated data mart that provides a comprehensive view of IoT device data, covering multiple aspects of the business.



Benefits

Implementing this solution led to several notable benefits for our client:

Enhanced Customer Support: The client's customer support team can now access a comprehensive 360-degree view of IoT devices, providing more informed and efficient support.

Comprehensive Insights: Splunk dashboards now provide a holistic view of device attributes, status, and hierarchical data, enabling informed decision-making.

Proactive Alerting: An advanced alerting mechanism ensures swift response by automatically generating ServiceNow tickets when log information is absent, aligning with predefined device configurations.

Automated Service and Maintenance: The solution automates the creation of service and maintenance tickets based on device-specific service terms, post-installation status, and timeline, enhancing operational efficiency and minimizing downtime.

Real-time Analytics: Real-time analytics on IoT device attributes and log data enables proactive maintenance and support, ensuring minimal downtime.

Scalability: The solution is highly scalable, with the ability to add new IoT devices seamlessly, thanks to a metadata-driven approach.

Operational Efficiency: The integrated data mart streamlines data retrieval and access, improving overall operational efficiency.



Approach and Methodology

The methodology used for implementing this solution can be summarized as follows:



Data Extraction:

Use Azure Data Factory (ADF) pipelines to extract data from IoT systems, private hubs through APIs, and Amazon RDS.



Data Transformation:

Transform the data into a suitable format and load it into Snowflake's stage tables.



Data Flattening:

Flatten JSON data using lateral flattening to make it more accessible for analysis.



Enriched Layer:

Apply data modeling to create an enriched data layer within the Data Warehouse.



Consumption Layer:

Create views that meet business requirements, making specific data sets available for consumption.



Analytics:

Implement alerting, data visualization, metrics, and log analytics using appropriate data platform tools.



Metadata-Driven Approach:

Ensure that the entire process is driven by metadata, allowing for the easy addition of new IoT devices to the network.



Data Orchestration and Monitoring:

Use ADF pipelines for data orchestration and maintain log tables for tracking errors and statistics.



Alerting Mechanism:

Establish a robust alerting system to respond to failures, maintenance issues, and service problems based on log data.



Integrated Data Mart:

Create an integrated data mart that provides a comprehensive view of IoT device data, covering multiple aspects of the business.

About Neev Systems

Neev Systems is a reliable IT partner committed to providing tailored solutions and services in and around Digital Transformation, Cloud Computing, Integration Services, ERP Solutions, and Product Engineering Services. Our mission is to leverage a collaboration-first approach for building efficient, reliable, and flexible solutions that help clients adapt quickly to shifting market dynamics and changing customer demands.

Partner with us and experience the benefits of working with a trusted IT partner that delivers exceptional quality and value.

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