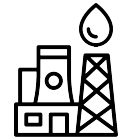


Success Stories

Building an API in Azure to Securely Access Data from Snowflake



Client

Multinational Gas and Oil Company

Industry

Oil & Gas

Country

Global

Architecture Services



TECHNOLOGIES LEVERAGED

Azure: Functions, API Manager, Front Door, Key Vault and Active Directory



HISTORY OF TRANSFORMATION

The customer chose to partner with us to accelerate delivery and because of the great and lasting relationship between both parties. The project was a collaborative effort that provided a ground for the exchange of best practices, and support in developing an understanding of approaches, patterns, and solution options for these types of data projects. After reviewing the client's needs and priorities, the project gradually morphed into an API development project to allow for more controlled consumption of data.



CLIENT CHALLENGE

They needed an API that was fast and automated to feed data from Snowflake to other internal applications that need it. The requirements spanned multiple dimensions, like:

- A Cloud-based Central Repository for corporate data subscriptions, contracts, invoices, etc.
- Data Stewardship: A single data management team to maintain the repository.
- Secure Data Access: Making data more broadly available to other parts of the organization.
- Monitor and track the usage of the data solution by internal stakeholders to develop an ROI.

However, the customer faced several deficiencies, including a lack of required cloud infrastructure, a data acquisition tool that did not meet business requirements, access to the data was not standardized, resulting in administrative work and additional costs, and a security paradigm that was kept at an individual level for each external group, resulting in complex and unscalable security management.



SOLUTION OVERVIEW

NTT DATA provided a 4-step process to deliver the solution:

1. The team gathered the requirements for an externally facing API.
2. Designed a secure API service infrastructure using Azure Functions setting up a CI/CD pipeline in Azure DevOps to automatically deploy the code.
3. Built and integrated the API adhering to the client's security policies making sure all access to the API was "read-only," so there could never be any real danger to the Snowflake database.
4. API Deployment which ensured Data Quality and Team Integration



BUSINESS VALUE & KP

Within 3 months NTT DATA was able to provide:

- An operational API-based interface, that demonstrates the team's "security-first" approach.
- An API with low maintenance costs in Azure Functions, allowing a lot of space for future scaling, both horizontally and vertically.

- Increase in value, though innovation in data processes and cost/administration load reduction.
- Client' s easy access to data housed in Snowflake, (no knowledge of SQL required).
- Ability to serve 3rd party data to external and internal groups over a REST API all via a single sign-on.



TECHNICAL SPECIFICATIONS

In order to address the client' s challenges, NTT DATA provided a 4-step process to deliver the API:

1. Gather the requirements for an externally facing API

In-depth analysis of the customer needs, environment, and documentation for an externally facing API to find the best solution for the customer.

2. Design a secure API service infrastructure using Azure Functions

The API' s code was written in Python for simplicity and ease of maintenance. This was equally important because both the client and the Hashmap NTT DATA teams were fluent in Python, making it easier to maintain in-house once the project was handed over. Automation: The team also set up a CI/CD pipeline in Azure DevOps to automatically deploy updates to the Azure Function code.

3. Build and integrate the API adhering to the client' s security policies

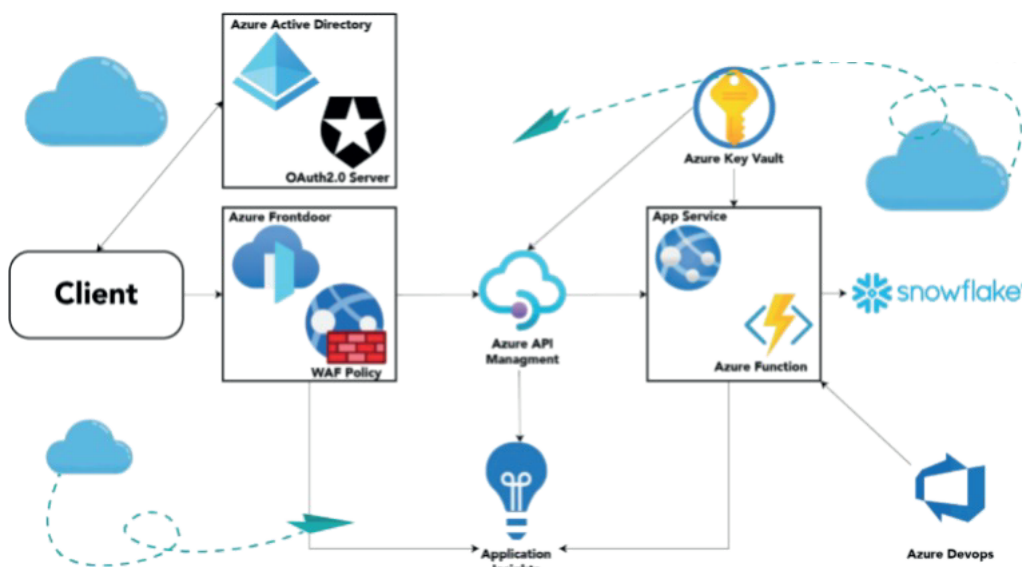
Users can simply handle API settings and security by using Azure API Manager, a scalable API administration platform with advanced security configuration. The API can be utilized on a worldwide scale by utilizing Azure Front Door, a service that is simple to set up, includes load balancing, and built-in security. The NTT DATA team expanded OAuth 2.0, which the client was already using but for a different set of tools, to offer secure, gated access to data into the cloud data platform.

4. API Deployment

- The user obtains an OAuth token from Azure Active Directory
- The user sends a request to a URL provided by Azure Front Door
- Azure Front Door passes the token to Azure API Management. Post security validation, the token is passed to the Azure Function
- Azure Function makes the request to Snowflake and returns data to the client

5. Ensured Data Quality and Team Integration

Due to some anomalies with the third-party data collection provider, the team additionally created a data freshness and notification procedure to notify the appropriate parties when data did not arrive in Snowflake as expected. The team also assisted in integrating some of the data science groups directly into the Snowflake structures because their activities will require direct access rather than using the new API.



KEY SUCCESS FACTORS :

- Fast and methodical delivery practices
- Quality-driven design practices
- NTT DATA' s know-how on cost reduction
- Long-lasting and trusted relationship with the client

NTT DATA Corporation

Toyosu Center Bldg., 3-3, Toyosu 3-chome, Koto-ku, Tokyo 135-6033, Japan
 Tel: +81 3 5546 8051 Fax: +81 3 5546 2405
www.nttdata.com/jp/

