

Microsoft **Fabric** COMMUNITY CONFERENCE

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Lessons Learned While Replacing ADF and Azure SQL

**Exploring strategies and challenges in
data migration.**



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Microsoft Fabric Community Conference



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Event Invitation
Code: **FABCON2025**



Meet the Speaker

Chris Hetzler

Solution Architect and Senior Manager at Eide Bailly, LLP

- BS in Computer Science – NDSU 2003
- MS in Software Engineering – NDSU 2005
- MS in Data Science – UW 2023
- 24 Microsoft Certifications, including DP-600 and DP-700
- 17 years at Microsoft prior to joining Eide Bailly in 2022
 - SDE, CSA, TSP, SDE/T, PM
 - Dynamics, Power Platform, and Azure
- LinkedIn - <https://www.linkedin.com/in/thehetz/>
- Blog – <https://www.thehetz.com/blog>
- Edie Bailly – <https://www.eidebailly.com/microsoft>



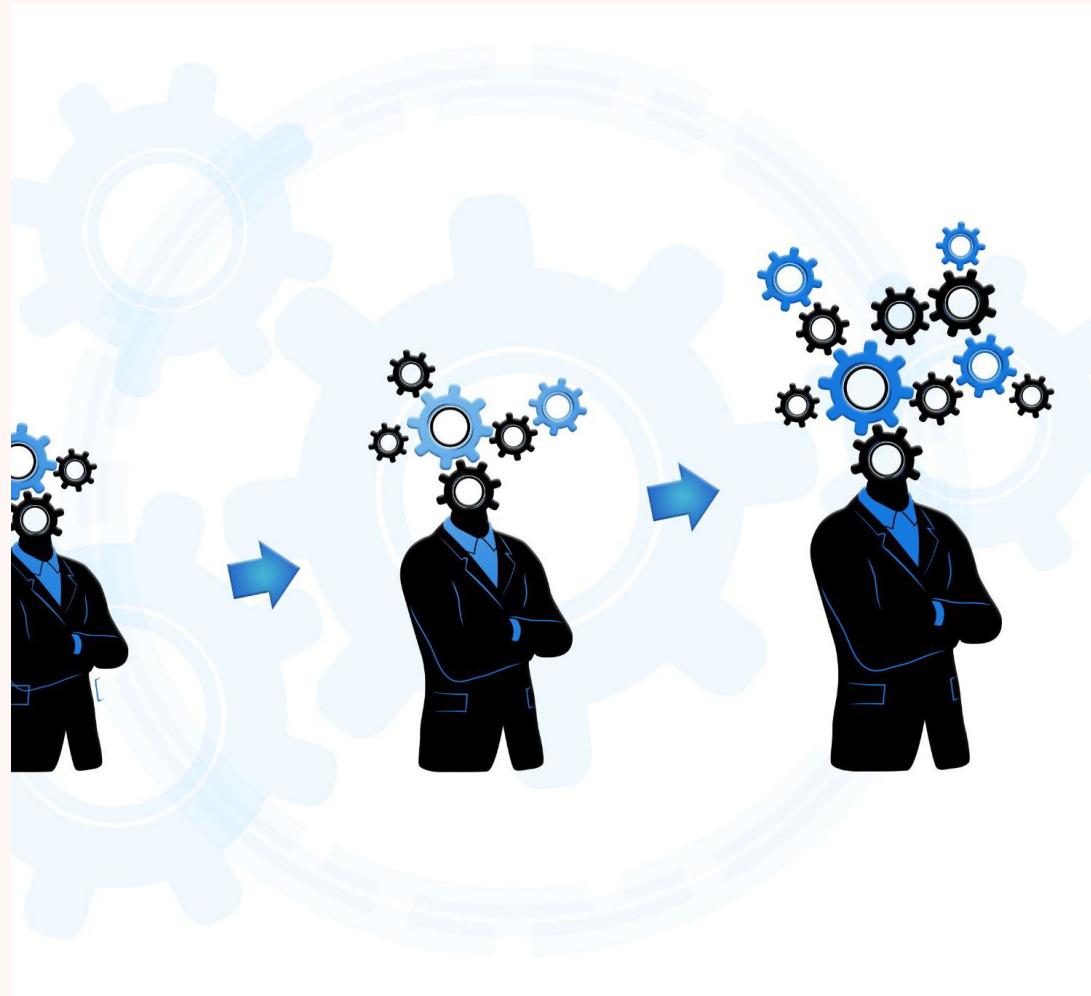
Who is the Client?

- International Hotel Chain
- Many brands and little integration between the organizations
- Data feeds daily or even real time
- Data warehouse leveraged for more than analytics





Session Agenda



Background Overview

A review of the client's original setup will provide necessary context.

Planning Phase / POC

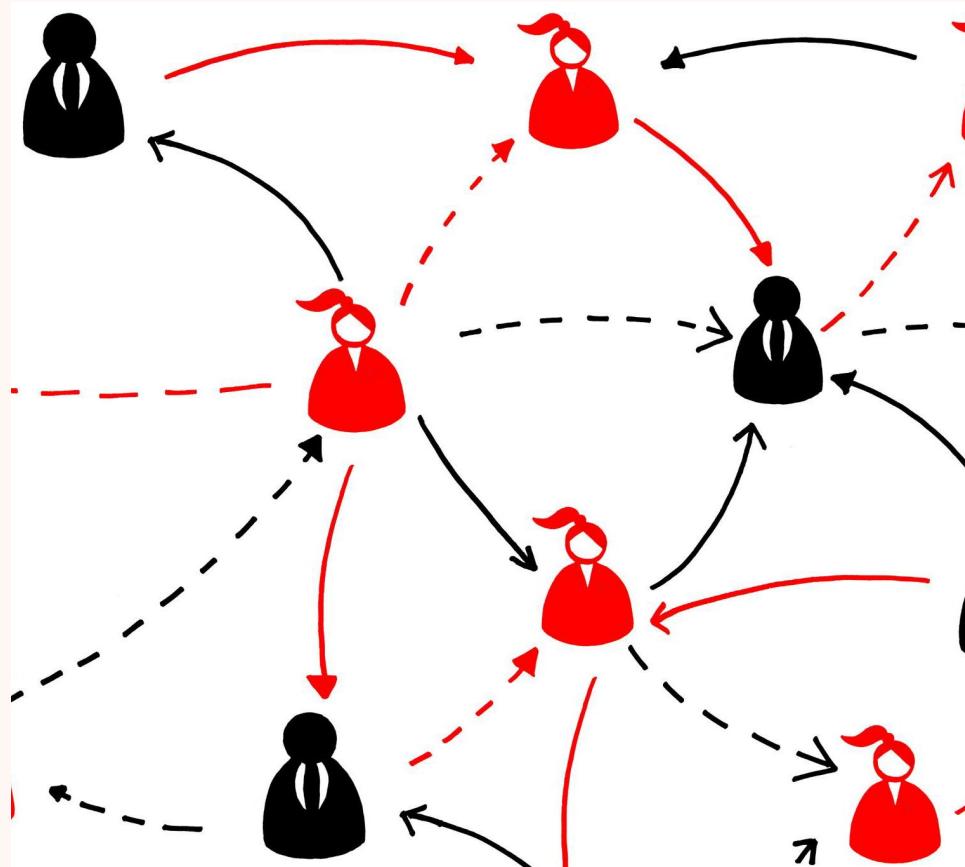
Discuss the strategies and plans laid out before the migration process.

Q&A Session

We will conclude with a Q&A session to address any questions.



Overview of Session Objectives



Understanding Migration Process

Gain insights into the essential steps of the migration process for effective transitions.

Identifying Challenges

Learn to recognize potential challenges and obstacles during the migration process.

Exploring Solutions

Discover various solutions that can help mitigate challenges faced during migration.

Best Practices Learning

Understand best practices to ensure smooth transitions in your organization.



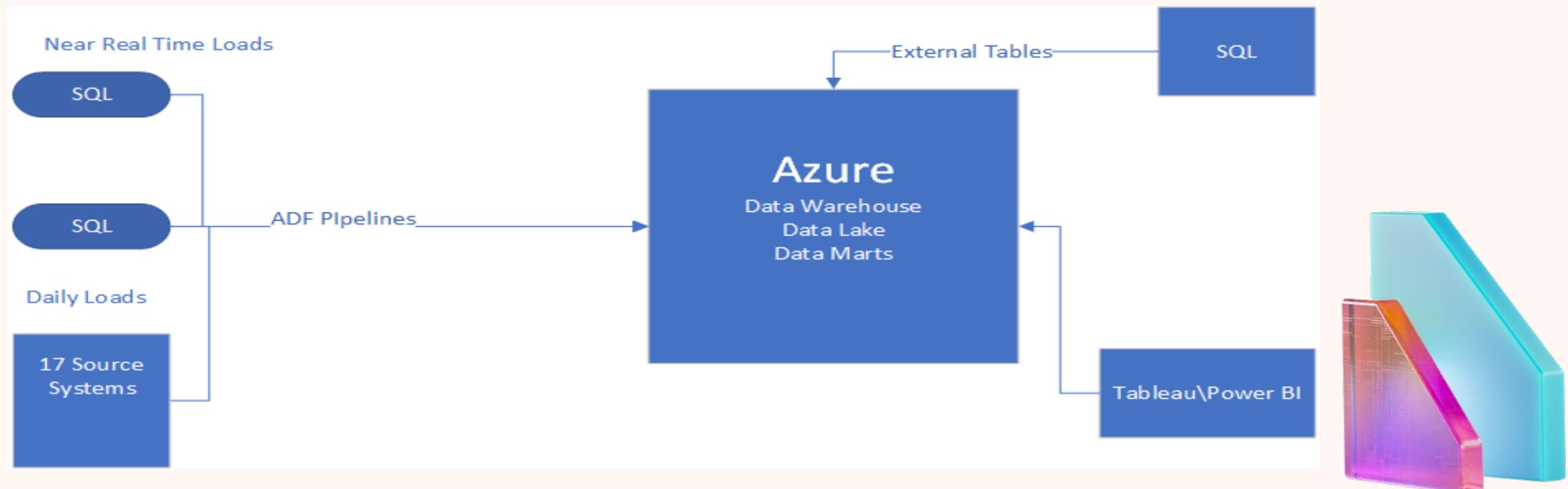
Client's Original Setup

Initial Architecture Overview

The client initially set up their data warehouse using Azure Data Factory and Azure SQL. This setup was foundational for their data management. This design came at a cost to performance for external systems and analysis.

Significance of Original Setup

Understanding the client's original architecture is crucial for evaluating the migration strategy. This insight informs decision-making during the POC and go-live transition.





Reasons for Migration to Fabric

Cost Efficacy and ROI

Currently ~\$8000 in monthly Azure spend, due to intense ADF pipelines, Azure SQL scale requirements, and rapid data growth.

Scalability

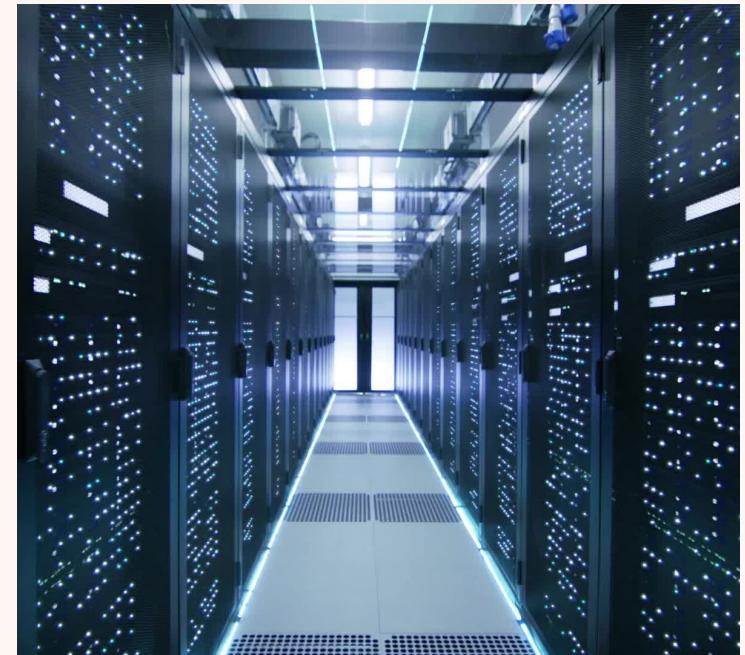
Fabric allows for increased capacity to manage growing data needs effectively, separately from the processing needs.

Performance Improvements

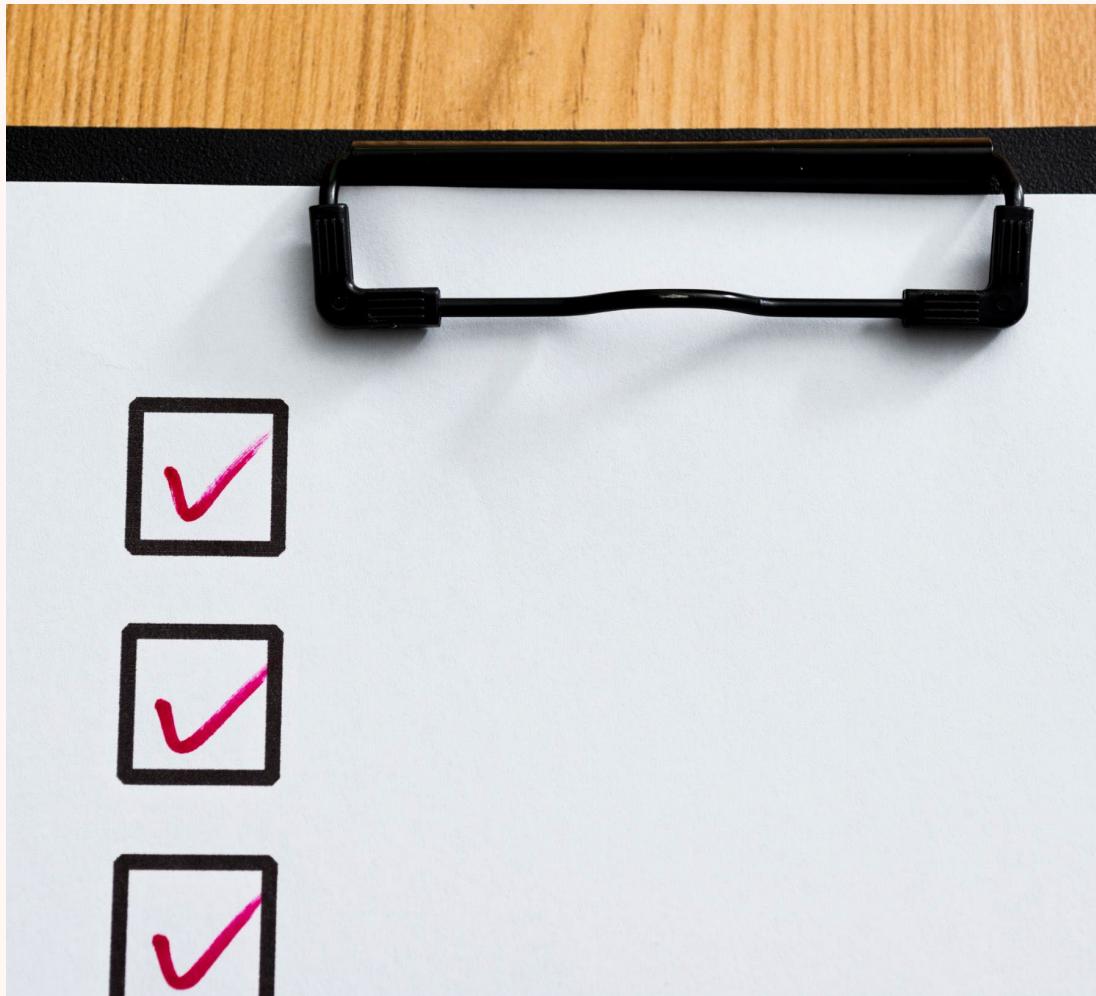
Enhanced processing speeds lead to more efficient data operations and quicker insights. Over a 100% performance increase has been noted for the most intensive pipelines.

Enhanced Data Management / Collaboration

Improved tools for data organization and accessibility streamline operations significantly. Enhanced cross group collaboration by bringing data engineers and analysts into the same workspace.



Initial Assessment and Requirements



Importance of Assessment

Conducting an initial assessment is vital for a successful migration.

Identifying Pain Points

The assessment helps uncover existing pain points in the current setup. Cost, Communication, downtime, Performance, and maintenance.

Identifying Stakeholders

The assessment helps uncover the key stakeholders and team members.





Key Considerations and Challenges



Technical Challenges

Identifying and resolving technical hurdles is crucial for a successful migration. Fabric is a new technology, so applying your team members' existing knowledge is critical for success.

Organizational Change

Managing organizational change is essential for team alignment. Training and support are necessary for smooth transitions. In a global organization, there are many challenges to change.





Developing Migration Strategy

Comprehensive Migration Strategy

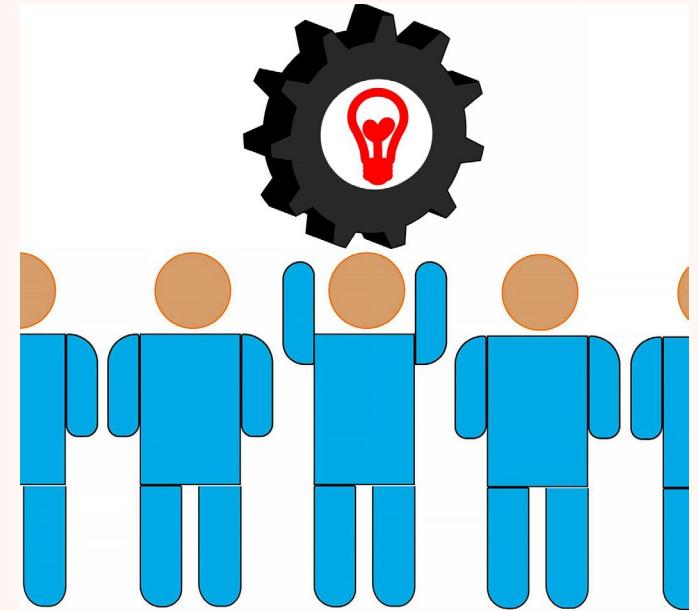
A well-defined strategy ensures an effective transition during migration processes. In this case, our strategy has evolved over time and is considered a work in progress.

Constant Communication

Ensuring that all team members have an area of responsibility and are in communication regularly avoids surprises and bottlenecks. We hold weekly meetings, and the team meets in ad-hoc sessions in between the scheduled meetings. The team is scattered across the globe.

Stakeholder / End User Coordination

Engaging stakeholders is crucial for aligning goals and ensuring smooth execution. During the POC, analysts were regularly invited to run their queries against the Fabric POC and evaluate the results against the existing data warehouse.





Our Migration Steps

POC Phase

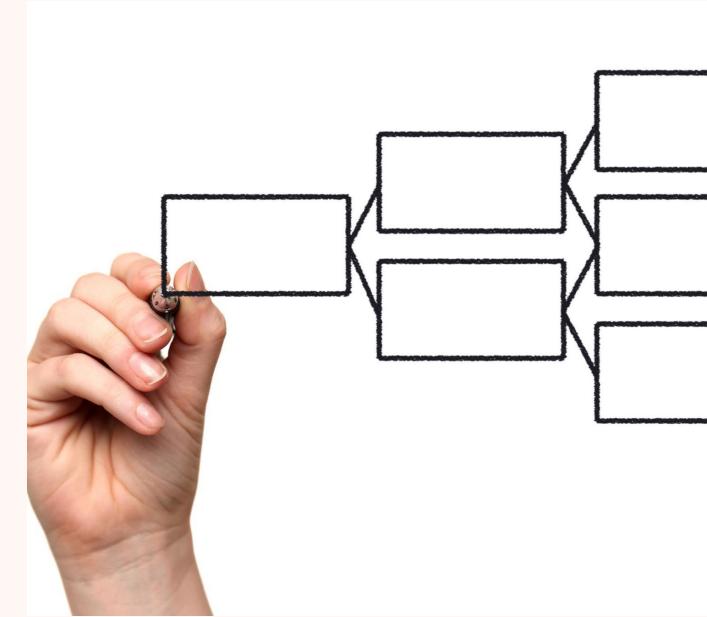
A POC was developed based on the fastest growing tables in Azure SQL (which were driving their costs up). The ADF pipelines were recreated in Fabric pipelines. Data was staged in a Fabric Lakehouse, rather than in Azure SQL tables.

Highest ROI Identification

The team looked at the ADF pipelines which were the highest in monthly cost and started migrating those into Fabric pipelines first. These pipelines were typically the ones that resulted in the highest rates of growth within the Azure SQL warehouse.

Testing and Validation

As the data begins to populate the Fabric warehouse, end-users are invited to test their queries and dashboards against the Fabric endpoint. This results in immediate feedback to the team and aids in prioritization of ongoing work items.





Tools and Technologies Used

Fabric Tools Overview

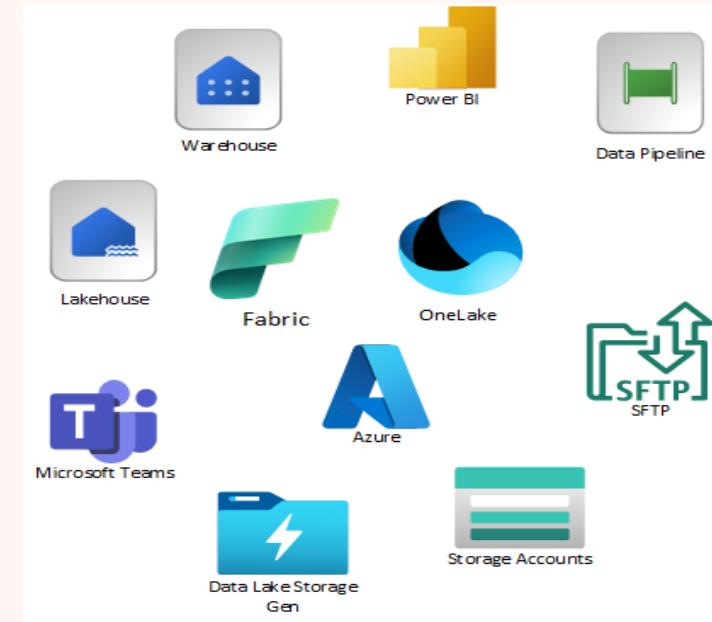
Data Pipelines, Workspaces, Power BI, Data Warehouse w/ SQL Endpoint, Lakehouse, OneLake

Azure Services

Storage accounts for landing external systems' data are still in play so the external systems did have to alter their implementations. Some files are encrypted, and we are leveraging the existing Azure functions and processes for the decryption.

Impact of Migration Tools

The right combination of tools ensures a smooth transition with minimal disruptions. Proper planning is key to success i.e., understanding the differences between Data Pipelines and Data Flows. We have a goal to limit the use of notebooks to only those scenarios where a no-code solution is not available.



Ensuring Data Consistency



Validation Strategies

Continuous validation from end users

Comparisons with existing data validation queries used in Azure SQL

Robust logging during key stages of data transformation within the pipelines

Validation of the logs after each run



Consistency Throughout Process

Common naming conventions allow various team members to understand which pipelines are moving which pieces of data.

Repositories for source control

Emails sent when errors or exceptions occur





Common Challenges Encountered

Lossy Type Transformations

When staging was occurring within the Fabric warehouse, type information for the columns was being lost (all columns were auto created as strings).

Downtime

Their strategy allows for near-zero downtime, while also managing costs effectively. As ADF pipelines are turned off, end-users are migrated to the Fabric warehouse endpoint.

Compatibility Issues

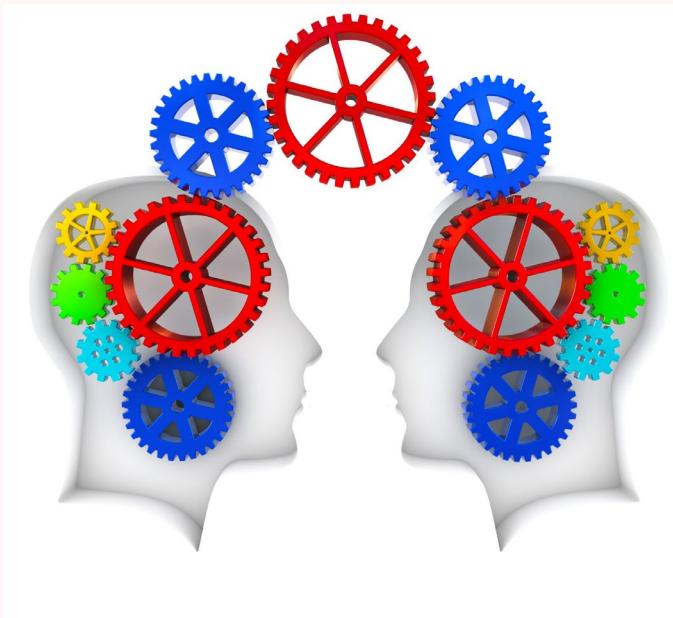
The client is a heavy user of Tableau as well as Power BI. This provide a small challenge for the team to overcome. The solution was to leverage the SQL endpoint exposed by the Fabric warehouse and provide the Tableau users with that connection string.

Security

The existing ADF pipelines manage all connection credentials in Azure Key Vault. All Azure storage accounts leverage Vnets and private endpoints for secure communications.



Solutions and Workarounds



Security

Until Key Vault is supported within Fabric, connection were simply created and an exception to the corporate policy was granted for this project, due to its critical nature.

Fabric identities are leveraged for all AuthN and AuthZ communication with Azure Storage. Privet Endpoints were also leveraged, prior to Fabric Identities' availability.

Type Information Loss

Leveraging the Lakehouse for staging eliminated this issue and provides a central repository for all logging data within a semi-structured store.



Lessons Learned



Successes of Migration

POC was critical to empower a skeptical team and leadership on the possibilities and benefits of Fabric.

Areas for Improvement

Key Vault, Source Control, Team Collaboration, Project management

Future Application of Lessons

Better coordination within the team and with external consumers. Team is rapidly up-skilling on Fabric.





Session Conclusion



Recap Key Points

Iteration works, starting with a POC and utilizing knowledge transfer along the way. Find a knowledgeable partner who wants to advise and not take over.

Planning Significance

Plan your iterations and slowly migrate to a new technology, validating at each iteration with end consumers.

Execution Excellence

Effective execution is essential to ensure smooth transitions during the migration process.





Q&A Session



Questions?



Clarifications?



Shared Experiences?





Get Involved in the Fabric Community



aka.ms/FabricCommunity

Connect with community members, ask questions, and learn more about Fabric



aka.ms/FabricUserGroups

Find a user group that matches your interests in your area or online



aka.ms/SuperUsers

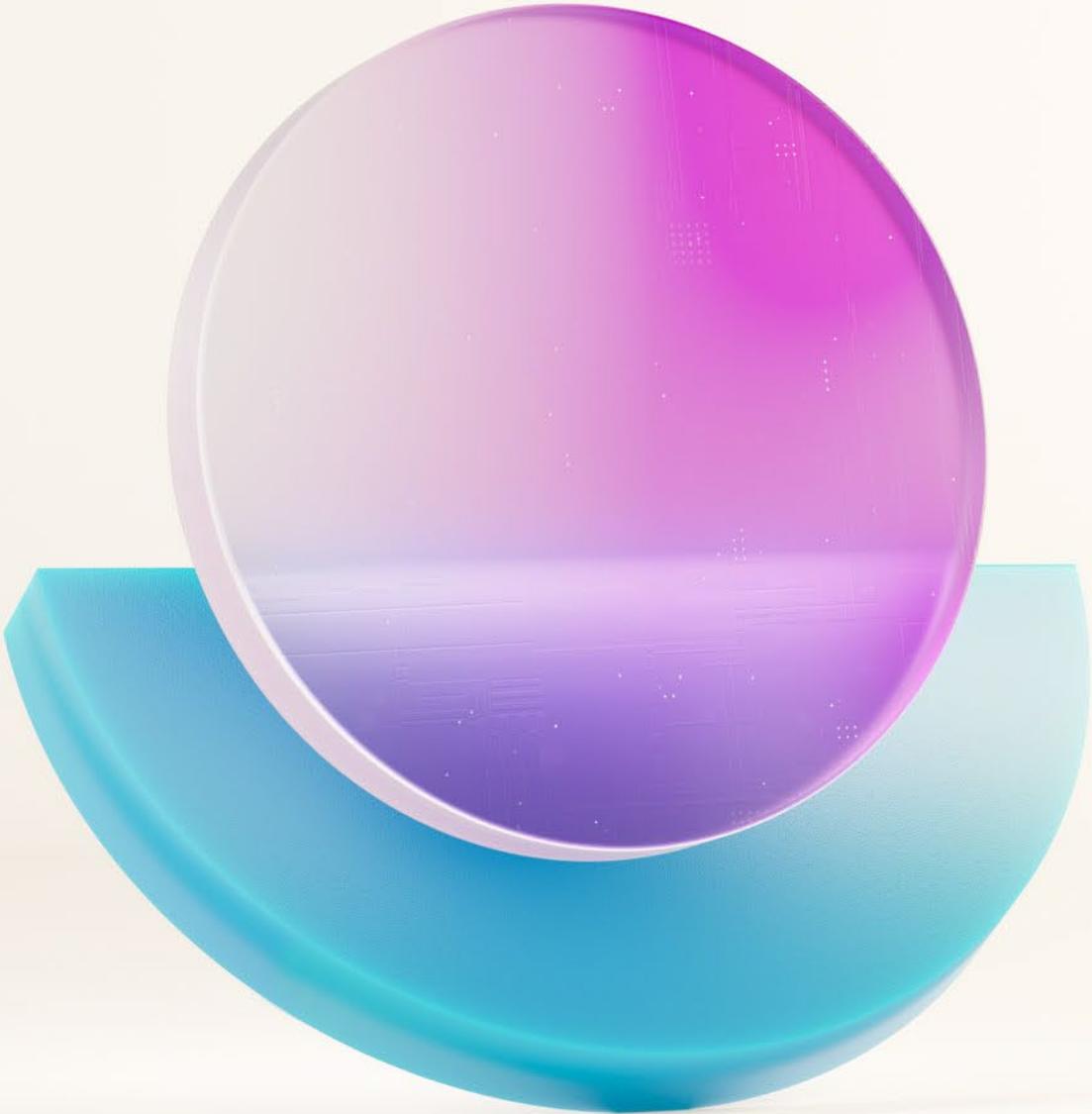
Spread your Fabric knowledge, insights, and best practices with others



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Session Feedback Surveys

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We really want to hear from YOU!

In the pursuit of making next year's Microsoft Fabric Community Conference even better, we want to hear your feedback about this session.

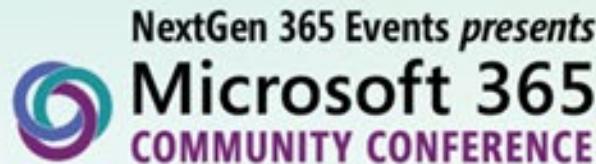
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- *Simply go to the Whova App on your smartphone*
- *Scroll down on the Microsoft Fabric Community Conference Homepage to 'Additional Resources' to click "Surveys".*
- *Click Session Feedback.*
- *Scroll down to find this session title.*
- *Complete the session feedback survey.*
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Microsoft Fabric COMMUNITY CONFERENCE

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