Synoptek

Data Modernization Boosts Query Execution by 50% for Building Manufacturer

Customer Overview

Customer

A global innovator in the building materials industry

Profile

The client provides durable, sustainable, energy-efficient solutions that leverage unique material science, manufacturing, and market knowledge to help customers win and grow.

Industry

Manufacturing

Services

Data Modernization

Business Need

The building manufacturer faced numerous challenges with its legacy, on-premises data mart solution. This solution limited the client's scalability to handle increasing data volumes. Maintaining the legacy on-premises infrastructure was expensive and required a dedicated team to manage hardware, software, and network configurations. The client also faced several operational inefficiencies due to reliance on manual processes.
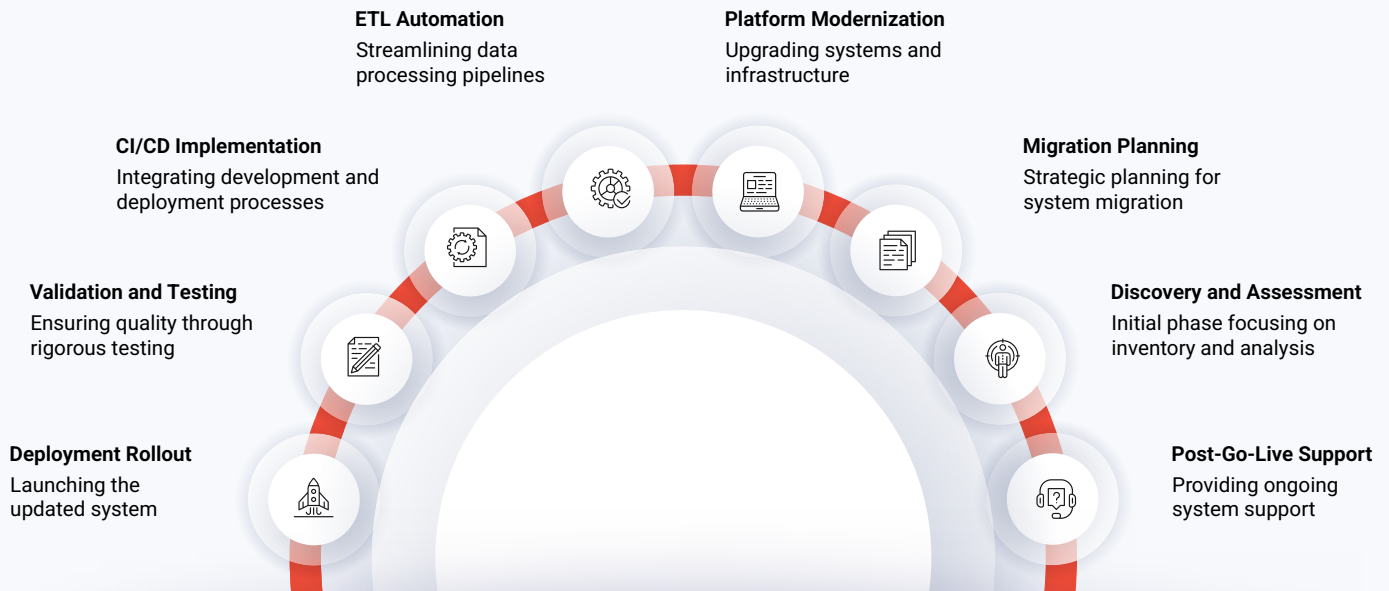
Faced with the challenges of a rapidly evolving market, the client required a modern data infrastructure to support informed decision-making and enable scalability.

To overcome the limitations of its legacy data mart, the client sought to migrate to a modern, cloud-based platform that:

- Provides scalability to handle increasing data volumes

- Reduces the operational overhead associated with maintaining legacy systems.

- Leverages the capabilities of Microsoft Fabric for advanced data engineering, warehousing, and analytics.

- Consolidates data from on-premises databases and ensures seamless Integration with existing systems such as Dynamics 365, SAP HANA, Power BI, AWS SQL DB, and custom file systems.

- Reduces operational costs: By migrating to Microsoft Fabric, the client aimed to Reduce infrastructure costs with a pay-as-you-go model and minimize the need for manual interventions and operational overhead.
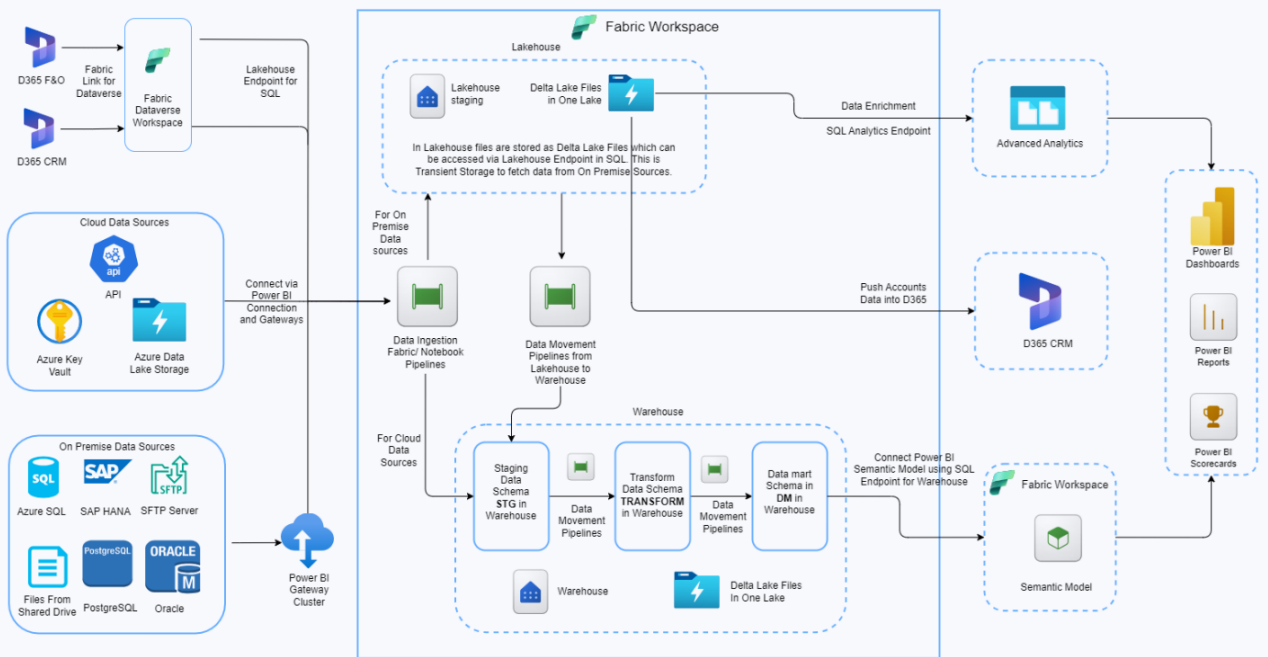
Solution and Approach

To address the client's business challenges and modernize its on-premises data mart, Synoptek employed a structured, phased approach built around discovery, planning, execution, and continuous collaboration. This ensured a seamless transition to Microsoft Fabric while maintaining operational continuity.

ETL Automation
Streamlining data processing pipelines

Platform Modernization
Upgrading systems and infrastructure

CI/CD Implementation
Integrating development and deployment processes

Migration Planning
Strategic planning for system migration

Validation and Testing
Ensuring quality through rigorous testing

Discovery and Assessment
Initial phase focusing on inventory and analysis

Deployment Rollout
Launching the updated system

Post-Go-Live Support
Providing ongoing system support

Key features of the modernization solution included:

1. **Metadata-Driven Data Pipelines:** A metadata-driven pipeline architecture in Microsoft Fabric was implemented. Instead of hardcoding source-to-destination mappings, metadata tables dynamically controlled source connections, file paths, and destination tables and schemas.

2. **Master Pipeline with Modular Design:** A master pipeline orchestrated end-to-end data ingestion, transformation, and loading workflows.

3. **Audit Logging and Error Handling:** Integrated audit logging into all pipelines and implemented necessary error-handling mechanisms.

4. **Partitioned Parquet Storage:** Data was transformed and stored in Parquet format with partitioning based on business keys (e.g., date, region).

5. **CI/CD Integration:** Azure DevOps pipelines automated deployments across environments (development, testing, production).

6. **Version Control:** Version control ensured all changes were tracked, and rollback mechanisms were implemented for fast recovery.

7. **Real-time Data Processing:** Dynamic pipelines processed data near real-time from sources like Dynamics 365 and SAP HANA, ensuring the latest information was available for decision-making.

8. **Centralized and Scalable Data Repository:** All data was consolidated in Microsoft Fabric's Data Warehouse, creating a single source of truth for analytics and reporting.
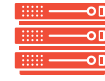

Technology Stack

Data Platform
Microsoft Fabric

Integration Tools
Azure Data Factory Pipelines

Storage
Lakehouse, Parquet files

Automation
Azure DevOps for CI/CD

Visualization
Power BI

Business Benefits

Synoptek successfully migrated 250+ SSIS packages with diverse transformations to Microsoft Fabric while maintaining data integrity. The data platform modernization resulted in several business benefits for the building manufacturer, including:

- Streamlined data workflows that improved data ingestion, transformation, and loading efficiency.

- Enhanced pipeline reliability with integrated audit logging and error-handling mechanisms.

- Optimized data storage and access with partitioned Parquet format based on business keys.

- Automated deployment processes across environments, reducing manual effort and minimizing errors.

- Access to real-time data for timely decision-making from sources like Dynamics 365 and SAP HANA.

- Consolidated data, improving data accuracy and accessibility for analytics.

40% faster data ingestion and transformation

50% faster query execution time

60% faster deployment time

About Synoptek

Synoptek delivers accelerated business results through advisory-led, transformative full-life-cycle systems integration and managed services. We partner with organizations worldwide to help them navigate the ever-changing business and technology landscape, build solid foundations for their business, and achieve their business goals.