Xylity Enables Cloud Modernization of an Insurance Platform

Location
Based in Charlotte, NC (USA)

Client
A top 10 provider of property and casualty insurance

Solution
Migrated on-premise data warehouse, reporting and analytics infrastructure to Azure Synapse Analytics platform, incorporating Synapse SQL, Azure Data Factory, Data Lake, Power BI and ML services.

Result
Increased query performance by 10x, reduced data science experimentation time from weeks to days, delivered new AI models reducing loss ratios by 15-20%. Transformed insurer into an insights-led organization.

About the Client

Our client has proudly served customers for over 75 years, earning a reputation as a trusted and stable provider of property and casualty policies. Headquartered in Charlotte, NC, our client employs over 2,000 insurance professionals across 21 states.

They write in excess of $8 billion in annual premiums across personal and commercial lines of insurance including auto, home, and business insurance.

Our client strives to make insurance simple and stress-free for their customers through personalized service, flexible coverage options, and fast claims response times. In recent years, the company has placed greater emphasis on data-driven decision making and customer insights to differentiate in an increasingly competitive industry.

Client's Goal

The client sought to modernize their aging on-premise analytics platforms to better support strategic business goals. They found the existing data warehouse infrastructure created barriers to accessing customer and product insights at scale.

Silos of data also inhibited customized analytics across lines of business.

Their vision was to consolidate their data assets, standardize data management, and enable self-service analytics leveraging advanced technologies. This would allow data-driven decisions to be scaled throughout the organization.

Executives hoped the new environment could fuel innovative uses of AI/ML to improve customer experience, identify new revenue opportunities, and enhance underwriting performance.

The overriding aim was empowering agility to stay ahead of shifting market trends and customer demands in the coming years.

The Challenge

The client faced significant hurdles with their legacy systems:

Performance Issues – The on-premise data warehouse relied on aging SQL Server databases that struggled under the volume of customer and operational data. Analysts often waited days for complex queries to return.

Siloed Data – Their customer, claims, policy and agent data resided in disconnected systems. Extracting insights required building separate reports across each siloed source.

Infrastructure Barriers – The on-prem environment demanded considerable resources for hardware maintenance and upgrades. This impeded the agility needed to experiment with new data and analytics tools.

Lack of Scalability – The static infrastructure could not keep pace with data growth or evolving analytics needs. Custom deliverables took 4-6 weeks due to capacity bottlenecks.

Dated Reporting – Analysts primarily used Excel pivot tables for reporting. They wanted self-service interfaces for dynamic ad hoc exploration and visual discovery.

Inhibited Innovation – Data science efforts were bottlenecked due to lack of resources for algorithm development, model training and operationalization at scale.

Governance Gaps – Fragmented systems compromised data quality and integrity. Our client needed enterprise data governance to fuel trustworthy insights company-wide.

These barriers prevented our client from maximizing the value of their customer insights assets. A modern cloud solution was required to eliminate silos and enable analytics at the speed of business.

Implementation Process

Our client partnered with us to leverage their Azure expertise and migrate the analytics platforms:

1. Assessment – Xylity analyzed their systems, conducted stakeholder interviews, and tested analytics use cases. This identified key pain points, opportunities and requirements for the targeted solution.

2. Architecture Design – We designed a cloud data platform centered around Azure Synapse Analytics for analytics, Azure Data Lake for ingestion, and Power BI for self-service insights.

3. Data Migration – Leveraging Azure Data Factory, 50TB of data was migrated from on-premise SQL Server to the cloud data lake over 6 months. Data was profiled, cleansed and transformed during this process.

4. Data Modeling – Dimensional data models were constructed according to analytical workflows. Previously siloed data from 14 source systems was consolidated into customer-centricschemas.

5. System Deployment – The analytics suite was deployed across Synapse SQL, Spark pools, machine learning services and a 20PB data lake. Power BI workspaces enabled fast report building.

6. Development and Testing – Synapse controlled batch/real-time data pipelines and AI model workflows. These were tested in staging before production handoff.

7. Training and Knowledge Transfer – We provided training to 200+ analysts, data stewards and engineers on new tools. Intranet resources institutionalized best practices.

8. Go Live – Over 4 months, use cases transferred off legacy platforms to the cloud one by one with robust validation. We provided ongoing support.

9. Change Management – Communications, onboarding and governance standards paved adoption. Stakeholder buy-in increased as early benefits emerged.

10. Performance Tuning – Xylity continues to help the client optimize costs, tune queries/models, and expand analytics capabilities.

Our Solution

We at Xylity designed a modern cloud data and analytics platform on Azure to overcome our clients challenges:

Azure Synapse Analytics - This served as the scalable analytics engine, using:

Synapse SQL for the data warehouse, capable of petabytes of customer data

Spark pools for big data workloads like ML model training

Machine learning services for automated model management

Azure Data Lake Storage - A scalable data lake ingested 50TB of raw historical data via:

Data Factory pipelines handling batch/real-time Extract, Load, Transform processes

Data profiles classified and cleaned disparate sources into common schemas

Data Platform - Dimensional customer, product and claims data schemas consolidated previously siloed sources into a coherent enterprise view.

Azure Active Directory - Provided single sign-on, access controls and governance alignment.

Power BI - Cloud-hosted BI tool fronted the analytics platform through:

Self-service visual reports and dashboards created without IT assistance

Live direct query pipelines to Synapse SQL and Spark clusters

Azure Machine Learning - Notebooks provisioned on Spark helped data scientists:
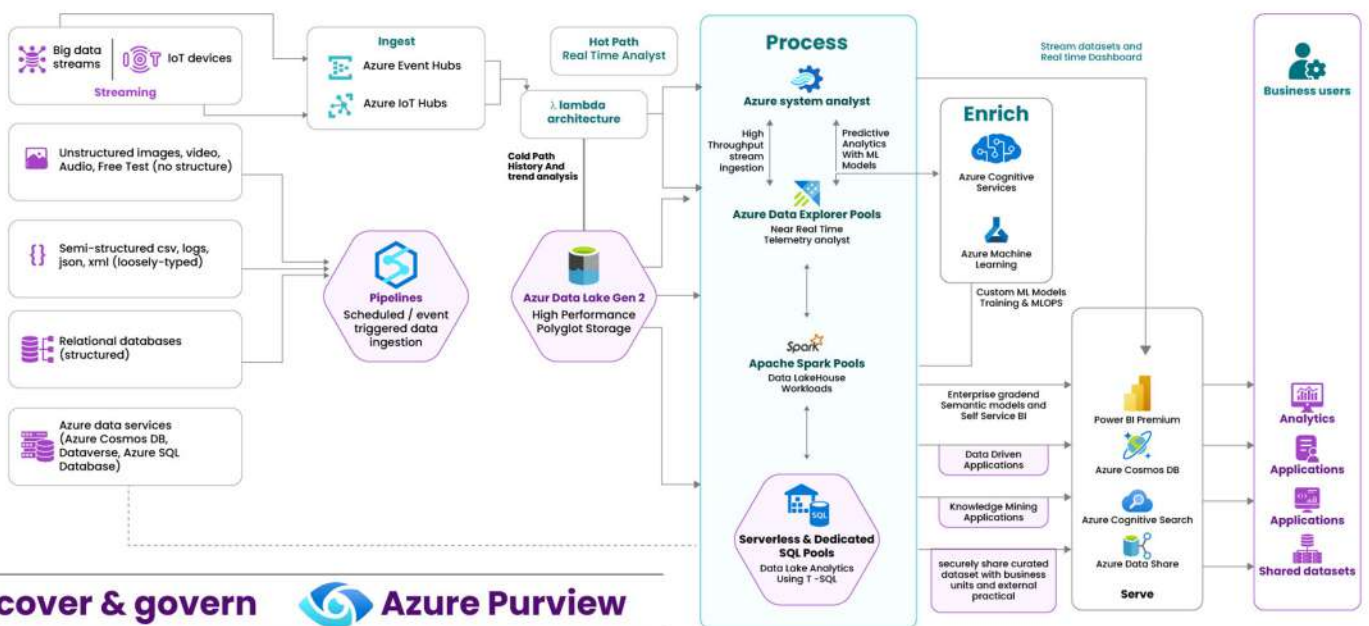
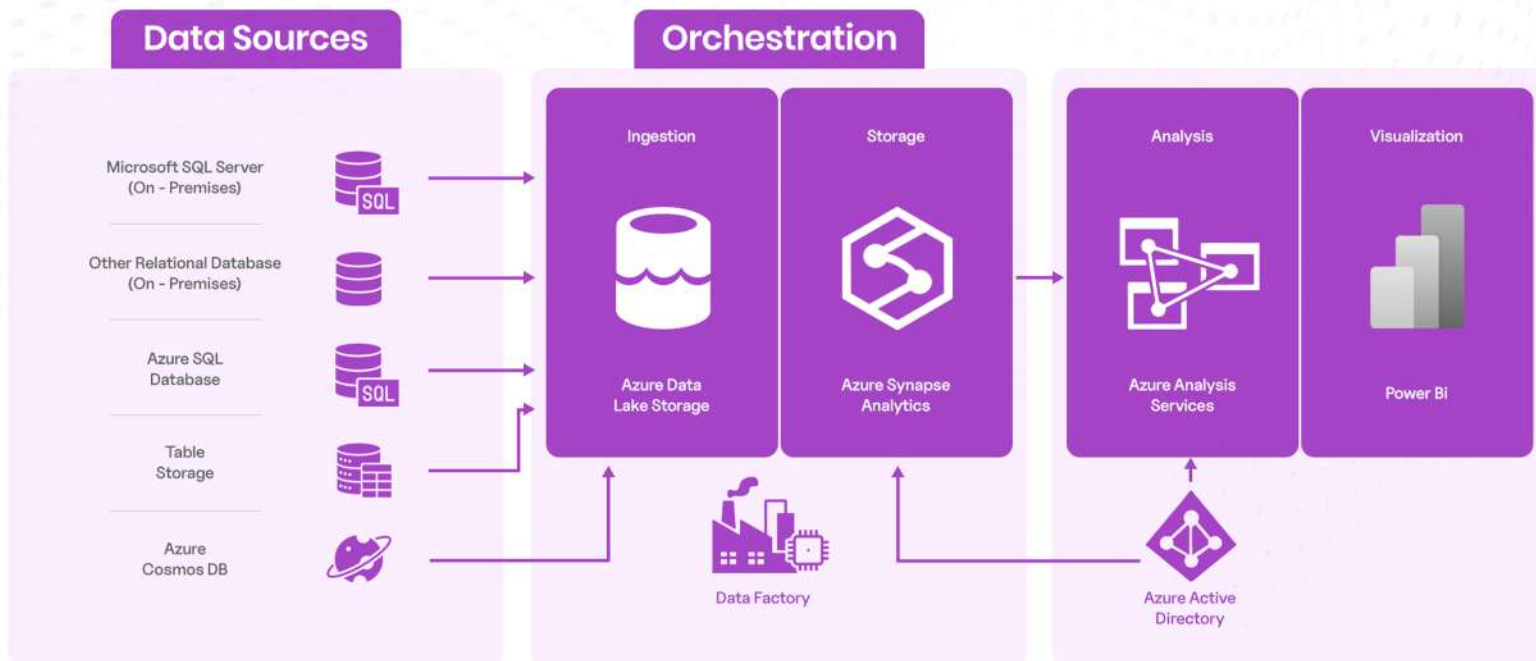Rapidly prototype advanced algorithms for predictive use cases

Train and deploy models using ML workflow automation

Monitoring and Alerts - Application Insights tracked system performance and failures to ensure SLAs.

This architecture removed on-prem barriers to deliver analytics-at-scale through a fully managed cloud service.

Detailed Architecture- Azure Data Warehosue

Discover & govern — Azure Purview

Microsoft Azure — Platform — Azure Active Directory — Cost Management — Azure Key Vault — Azure Monitor — Microsoft Defender for Cloud — Azure DevOps & GitHub — Azure Policy

Data Sources

Microsoft SQL Server (On - Premises)

Other Relational Database (On - Premises)

Azure SQL Database

Table Storage

Azure Cosmos DB

Orchestration

Ingestion — Azure Data Lake Storage

Storage — Azure Synapse Analytics

Analysis — Azure Analysis Services

Visualization — Power Bi

Data Factory

Azure Active Directory

Results

Our client realized substantial business benefits post-migration:

Increased Performance – Analyst queries returning in seconds versus days yielded 10x improvement in productivity.

Self-Service Agility – 200 Power BI reports published with live data pipelines empowered decentralized insights consumption.

Enterprise Access – Unified data ecosystem integrated 13 line-of-business teams across functions on shared insights.

Enhanced Innovation – Data scientists reduced experiment cycles from weeks to hours using Anthropic's toolsets and infrastructure.

Automated Workflows – Synapse productionized over 10 AI models via ML Pipelines with new models deployed monthly.

Cost Optimization – Cloud economics and reserved instances slashed analytics infrastructure expenses by 30%.

Advanced Analytics – Interpretable models analyzing terabytes of structured and text customer profiles now influence pricing, product design and marketing strategies.

Scalable Platform – Deployed architecture can expand elasticly with the business, accommodating future data deluges and innovation.

Tech Stack Used

Azure Synapse Analytics

Azure Data Factory

Azure Data Lake Storage

Power BI

Azure Machine Learning

Azure Active Directory

Azure SQL Database

Azure Application Insights

Azure Databricks

Azure Container Instances

Conclusion

Our client now has an enterprise-grade, cloud-based analytics hub delivering competitive advantage. As our expert consultants migrate other lines of business, insights will further transform actuarial science, pricing, fraud detection and underwriting.

Insurance has always relied upon quality data assets – Xylity Consulting can help your organization leverage them through modern architectures on Azure. Whether migrating from legacy platforms or architecting greenfield analytics from inception, we have the expertise to eliminate your obstacles and create opportunities through insightful data.

Contact us to discuss how we powered our insurance giant client insights revolution and how we can do the same for you.