Modernizing data warehouse capabilities with Azure Synapse Analytics

How a successful assessment and cloud migration process enables you to cut costs, streamline analytics, and unify your data

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Summary

Together, Lumen and Azure Synapse Analytics offer significant competitive advantages for organizations still relying on legacy data warehousing solutions. A cloud-based service built on top of Microsoft Azure technology, Synapse gives clients access to enterprise data warehousing capabilities, big data analytics, data integration services, and a comprehensive set of rich features for visualizing, interpreting, and maximizing the value of your data — all without the traditional limitations of on-premises data platforms. Additionally, by separating compute and storage, Azure Synapse makes it possible to harness data across a limitless scale, and helps Lumen reimagine legacy data as a dynamic, digital assembly line.

Yet realizing these benefits requires organizations to migrate not only their data, but also the business processes, reports, analytics, and numerous other data management solutions connected to their existing on-premises platform. To ensure success, this process needs to involve careful planning in order to address the complexities, costs, and other possible business disruptions of migration.

Read on to learn more about the advantages of Azure Synapse Analytics and how the Lumen assessment and migration process will help you accelerate your data warehousing and analytics capabilities.

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Limitations of legacy data warehouses

Businesses are producing and collecting more information than ever before. As a result, success today can often be measured in an organization's ability to ingest, manage, and analyze data. This has created a digital economy in which companies compete to solve complex, data-intensive problems using cutting-edge solutions, such as self-service analytics, machine learning models, and artificial intelligence.

Due to its speed and flexibility, the cloud has emerged as the ideal data infrastructure to give IT teams an edge. Yet despite this fact, many organizations are still holding onto their legacy on-premises data warehouses.

> **"** Whether they are concerned about the cost investment of moving to the cloud or are unwilling to handle the complexities of migration, it's important to understand how legacy data warehouses are holding them back.

1. Legacy data warehouses lack the flexibility to meet modern business needs

Data storage and analytics needs were once much more predictable and consistent, often staying the same or increasing at a steady rate. This gave organizations plenty of time to manage growth by adding on or upgrading the hardware powering their on-premises platforms.

But with data needs now expanding so quickly, this strategy can no longer keep up. Even with extensive investments, many legacy systems can become outdated in as little as a few months. And even if they can handle general usage today, they may not be capable of managing sudden spikes in storage and analytical needs. This lack of flexibility and inability to scale with the organization can quickly turn into a major impediment to future business growth.

2. Legacy data warehouses are costly and time-consuming to manage

Organizations determined to meet the demands of modern data while still using their legacy data warehouses will have to make continuous technology investments, as well as pay for additional costs such as licensing and ongoing systems engineering. As teams continue to ask for more data and the competition demands it, the expenses can quickly become prohibitive.

Compounding this challenge is the extensive time commitment often required to manage and maintain a legacy data platform. As hardware becomes outdated, upgrades and expansions are made, and data sources continue to proliferate, these legacy infrastructures can become increasingly complex and difficult to maintain. This may require additional time and even staff to monitor, make improvements, and ensure reliability — taking away resources from more value-added tasks like data analysis.

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3. Legacy data warehouses cannot compete when it comes to innovation

Modern capabilities like machine learning, AI, and self-service analytics are helping lead the way to a new era of digital transformation. As organizations increasingly require the ability to pull valuable insights out of more data, as well as more types of data, the ability to intelligently automate data management and analysis can be the difference between gaining a competitive advantage and falling behind.

Yet these sophisticated capabilities often require intensive amounts of computational power that on-premises data warehouses cannot spare. In large part, this is because these legacy systems do not separate their compute and storage layers, meaning that as data volumes increase, their ability to effectively process and analyze information decreases. This can make it a struggle to keep up with even basic computational needs, much less benefit from the predictive analytical capabilities currently transforming industries as diverse as healthcare, retail, and manufacturing.

4. Legacy data warehouses do not offer full visibility and control

> " A cornerstone of the data-driven organization is not only the ability to make data visible to those who need it, but also having full management and governance control over that information."

Even when they are managing data streams from a public cloud, an on-premises system, and the edge, an organization should be able to paint a comprehensive picture of their data and allow teams to conduct analysis as they see fit.

But this ideal can run into a roadblock when it comes to legacy data warehouses. Often burdened with aging technology and applications unable to communicate or integrate with other infrastructures, organizations that continue to rely on legacy data warehouses may find the information they contain siloed. This can effectively lock an organization into outdated tools and keep them from realizing the full value of their information.

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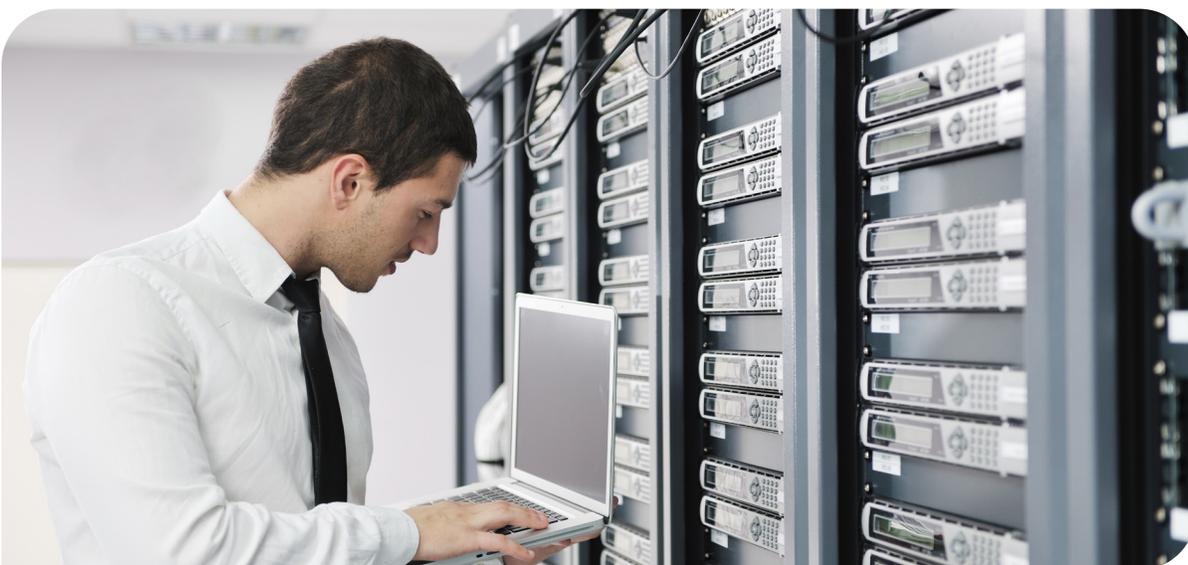
What is Azure Synapse Analytics?

Azure Synapse Analytics is a cloud-based platform service that combines the capabilities of enterprise data warehousing and big data analytics with a variety of other data visualization, monitoring, and management tools. Because it keeps compute and storage separate, Azure Synapse allows organizations to query and analyze data according to their unique and variable needs, giving the service limitless flexibility, while its integrated functionality with tools like Power BI, Dynamics 365, and Azure Machine Learning make intelligent analysis simple.[1]

Benefits of migrating to Azure Synapse Analytics

Processes both structured and unstructured data

One of the most significant differentiators of Azure Synapse is its data lake integration. While data warehouses are most commonly associated with relational databases (used with structured data such as customer contact information), data lakes are largely used with variable and semi-structured data, making them better suited for open experimentation. Rather than locking users into a single architecture, Azure Synapse lets users take advantage of either option or even combine separate aspects of both according to their needs, making it ideal for organizations that want to gain more cohesive control over different types of data.

Addresses broader portion of the data lifecycle

While the flexibility of Azure Synapse makes it possible to support a variety of data types, it also gives users access to a comprehensive range of analytical, visualization, and collaborative tools, making it one of the more unified data warehouse and analysis options available. For instance, deep integration with Azure Machine Learning and Power BI enables users to quickly move from consuming data to conducting intelligent analysis and generating detailed visualizations and reports. Microsoft Teams connectivity even makes it easy to share these reports and start collaborating instantly.[2]

Simplifies data management

Azure Synapse is designed to offer organizations an intuitive and user-friendly service for ingesting and managing data from multiple sources. For example, data engineers can easily manage multiple data pipelines by taking advantage of no-code and low-code visual environments, making it possible to quickly unify different services inside a single unified interface. Support for a range of different languages — including T-SQL, KQL, Python, Scala, Spark SQL, and .Net — further facilitates data management and helps reduce the total cost of ownership.

Improves privacy and security controls

With both data volumes and the need for analytics only increasing, ensuring comprehensive data security in the cloud is essential. Azure Synapse offers multiple layers of security features for protecting an organization's most sensitive data. These include features such as automated threat detection and always-on encryption, as well as granular control with both column-level and row-level security. Governance features, such as dynamic data masking and role-based access controls, further protect data privacy and help ensure a solid security foundation.

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Considerations as you begin the migration process

Deciding to migrate your legacy, on-premises data warehouse to a cloud-based service like Azure Synapse Analytics will help modernize your organization by giving it the analytical resources, flexibility, and security to compete in today's data-driven world. However, migrating a complex system like a data warehouse often requires much more than a straightforward "lift and shift" approach. This is especially true when it comes to legacy platforms, which likely include stored procedures, user-defined functions, and hand-coded routines that will not transfer over to the new platform. As a result, without careful planning, a migration project can quickly turn into a development project.

Instead, Lumen can help ensure this migration proceeds smoothly by putting in place a modernization strategy that takes into account best practices for avoiding business interruptions, mitigating unplanned costs, and reducing risks.[3]

Avoid big bang projects

Migrating and modernizing an out-of-date system can be exciting, but it's important to steer away from the temptation to do everything at once as quickly as possible. That's because replatforming a data warehouse is a large and complex project that can involve many moving parts, such as redistributing data, removing redundant databases, and taking control of rogue data marts. Partnering with the right vendor will help you break this project apart, decreasing the risk of something going wrong.

Start out small

Unexpected incompatibilities and difficult workload transfers are bound to emerge throughout the migration process. However, we can help you prepare for these challenges by beginning the migration with a manageable data subset or use case. Ideally, this will also be something that showcases the immediate value of the new platform as well. Later, we'll help you build off this success gradually by taking an incremental approach and working your way up to more problematic phases later on.

Migrate more than data

Data should not be the only focus of a migration. It is also important to consider how to move or augment the many different structures and entities related to this data. This may include connected applications, reports, and business processes, as well as any data management solutions and existing governance controls. As part of your successful migration plan, we will also carefully review all of these various entities in order to determine if they will remain vital when inside the new platform or if they can be removed.

Improve data

In order to achieve modernization, a migration process should not simply move existing problems onto a new system. Instead, we will take the opportunity to consider how each data element can be improved. This may involve removing outdated data streams, repairing data models, conducting reviews of data quality, or assessing the accuracy of metadata. Left unaddressed, inefficiencies and issues that plagued the legacy data warehouse may continue to persist.

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Case study: Achieving efficiency and scalability with Azure Synapse Analytics

How Lumen helped a B2B distributor migrate its legacy data warehouse to the cloud and modernize its data strategy

When distributing medical supplies, data is everything. Knowing where to establish a new distribution center, anticipating which products are likely to experience a spike in demand, identifying potential new customers, and maintaining efficient operations across a global distribution network all require the ability to not only ingest data from a multitude of different sources, but also analyze that data in order to identify patterns, locate problems, and take advantage of potential opportunities. It requires a streamlined and modernized data strategy capable of scaling with the company and driving new growth.

After relying on an on-premises data warehouse for over a decade, a prominent B2B medical supplies distributor recognized the need for change. **Its legacy technology stack could no longer meet the performance and volume demands of its business.** Users were not able to process data at the speeds they expected, while the time it took to generate and run reports on the platform was hurting productivity. Additionally, legacy architecture prevented the company from bringing in third-party unstructured data, cutting into its ability to run advanced analytics.

The need for a modern data platform was evident, so the company relied on Lumen. In order to ensure a successful migration without business interruption, we built out a phased plan for assessing potential solutions, setting up and migrating data to the cloud, and testing and onboarding new users.

1. Assessment

We began by conducting a comprehensive study of the customer's needs in order to recommend an ideal solution. This process involved considering the features of its legacy data warehouse against the company's business requirements. We also looked at the total data volume we would have to move, as well as the different types of workloads the new solution would need to support. With this information, we created metrics in order to evaluate four different solutions, then made recommendations to key stakeholders at the company.

Azure Synapse Analytics emerged as the clear choice for several reasons. Because the company was already utilizing the Azure ecosystem, Azure Synapse provided an easier migration path than other solutions. Additional features such as its ability to process both structured and unstructured data, run zero-code data science analytics, and separate compute and storage were also appealing. To further alleviate any possible concerns, we partnered with Microsoft to create a strategy for configuring Azure Synapse exactly like the customer wanted.

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2. Setup and Migration

In the next phase, we focused on laying the groundwork for as quick and seamless migration process as possible. This involved steps such as setting up the customer's network and storage accounts, provisioning its Azure Synapse instance, and ensuring its existing Azure subscription was connected to its network.

As we began migrating the customer's data workloads from its legacy system to Azure Synapse, we followed an incremental approach that started with the smallest workloads before gradually working up to larger and more complex tasks. This made it possible to establish an efficient migration pattern: after exporting data, we did the schema migration and the data migration, followed by an incremental refresh. Finally, we would automate this entire process before moving it over to the testing phase. Concurrently with all of this, we tested out applications and tools that the company wanted to use so that we could determine if they could successfully connect to Azure Synapse.

3. Testing and Onboarding

Once data and associated tools and applications were migrated, the next phase involved conducting data quality checks. We ran various MicroStrategy reports and confidence tests in order to ensure the data had both been migrated successfully and to establish baseline performance. Throughout this process, there were zero interruptions to data access on the customer's existing legacy systems.

The final phase involved ensuring all users have the same access controls as they had on their old system. This meant recreating group segregations and governance rules for the new Azure Synapse instance. Once completed, the new data warehouse transferred over to them.

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Results

Previously constrained by an aging legacy data warehouse, the company now has access to the limitless analytic potential of Azure Synapse. Within a single cohesive platform, it can ingest and manage data from a variety of sources, eliminating data silos, as well as connect this data to integrated visualization and business intelligence tools in order to instantly produce detailed reports — a process that once took days. With compute and storage now kept separate, the company can also manage both structured and unstructured data, giving it the resources to conduct next-generation analysis and scale with ease.

In addition, as part of its migration process, Lumen conducted large-scale consolidation and rationalization of existing workloads and reports in order to determine which have value and which are no longer being used. This has allowed the company to streamline its analytics operations and deliver greater business value to its customers.

This entire process took just six months.

Streamline your migration process with Lumen

Migrating your data warehouse may seem like a daunting task, but Lumen gives organizations of all sizes a comprehensive and strategic approach to moving your data and fully modernizing your data strategy.

Our certified professionals have the knowledge and experience to assess the migration needs of any company. At the same time, our end-to-end capabilities let us move beyond assessment and provide complete services such as implementation and long-term management. This expertise allows you to avoid hiring different vendors for each project, saving you both time and money and helping ensure a more cohesive and unified experience.

Plus, as a vendor-neutral organization, we never align ourselves solely to one company or solution. Instead, we will conduct a thorough review of your needs in order to give an unbiased and honest opinion every time — whether that involves Azure Synapse or another solution. Our priority is helping you fully modernize your data strategy so that you can digitally transform.

What will you achieve with more modern data warehouse capabilities? Contact us to find out.

Footnotes

1. Microsoft, "What is Azure Synapse Analytics?", 2022.

2. Microsoft, "A data warehouse in the cloud helped Walgreens transform operations and accelerate decision making," 2020.

3. Microsoft, "Plan a data warehouse migration," 2021.

Why Lumen?
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877-453-8353 | lumen.com | info@lumen.com

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