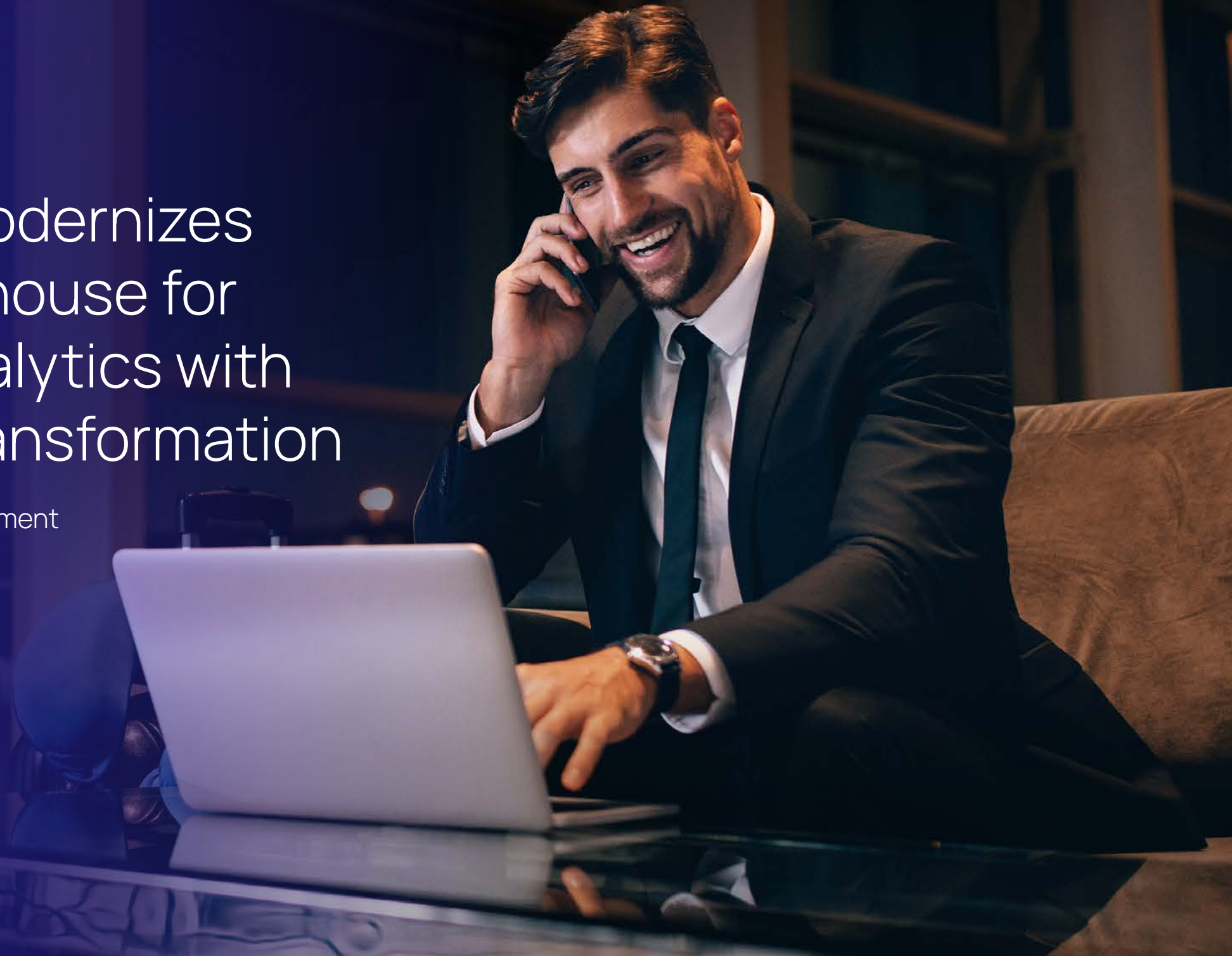


HEXAWARE

A US Airline Modernizes Its Data Warehouse for Enterprise Analytics with AWS Cloud Transformation

Unified enterprise data management

Case study



Client

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- Summary

Global US Airline

Our customer is a US-based global airline, strategically operating across multiple geographies and markets. With a workforce exceeding 100,000 employees distributed across various hubs, it effectively supports extensive operational frameworks, delivers exceptional customer service, and drives innovative technology initiatives to improve airline efficiency and passenger experience.



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Scalable Enterprise Data Architecture and Data Operations Automation

Our client recognized the need to modernize their data processing pipeline, transitioning from an on-premises Informatica-based ETL system to a more advanced, cloud-native data warehouse. Their goal was to implement a scalable cloud data architecture that could efficiently manage both batch and real-time data ingestion while accommodating a variety of file formats and database sources.

Additionally, they required that the processed data be delivered seamlessly to their enterprise Teradata database for analytics. The client also aimed to enhance automation within their data processes, reduce their reliance on proprietary tools, and simplify data management across multiple source systems.

This data modernization initiative was crucial for improving operational efficiency and ensuring they remain competitive with the latest AI capabilities, with an immediate concern being data operations automation.

Additional Legacy Data System Challenges

- **Limited Real-Time Processing:** The legacy system could not support real-time data processing, which affected its responsiveness to time-sensitive needs.
- **Complex Data Management:** Managing data across disparate systems created connectivity and management issues.
- **High Maintenance Overheads:** Significant manual maintenance was required for data transfers and quality issues.



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Migrating to AWS for A Cloud-native Enterprise Data Warehouse

Our solution involved designing a cloud-native, modular, and scalable data pipeline backed by an enterprise data warehouse with Amazon Web Services (AWS), replacing the Informatica-based infrastructure.

The airline’s new cloud data architecture aims to enhance data processing efficiency and provide flexibility to adapt to changing business needs. Using AWS services for data warehousing and serverless computing, we created an enterprise analytics environment that supports integration with various data sources and real-time insights.

Furthermore, this migration to AWS facilitates improved cost management and resource optimization, ensuring that the airline can focus on deriving insights from their data rather than managing complex infrastructure.

Creating the New Data Pipeline on AWS

A scalable efficient data pipeline is critical for enterprises to handle the ever-growing volume of data. Leveraging AWS services provided a scalable, cost-effective, and serverless approach to data processing, orchestration, and storage. Here’s the key AWS services we used in creating the pipeline on AWS:

- **AWS Lambda and AWS Glue for efficient data processing and ETL workflows:** Enabled a cloud-native architecture with serverless components, using Glue for long-running operations and Lambda for short-duration, event-driven tasks—central to the broader AWS cloud transformation.
- **Apache Airflow for orchestration of data pipelines on AWS (excluding transformation):** Delivered flexibility and reduced dependency on proprietary tools, supporting agile and scalable workflows within the cloud-native environment.
- **Amazon S3 as the centralized repository:** Acted as the core of unified data modernization efforts, organizing incoming data into dedicated buckets by application to support scalable and efficient data pipeline on AWS execution.
- **Amazon DynamoDB for job tracking:** Provided real-time visibility into job statuses, error logging, and metadata storage, ensuring reliable and traceable operations within the cloud-native architecture.
- **Teradata integration using AWS Glue and Lambda:** Improved analytical performance and insert management, aligning with the broader goal of migrating to AWS and reducing dependency on legacy systems.
- **Kafka-based real-time data ingestion:** Powered a robust data pipeline on AWS, with Lambda for routing and saving data and Airflow for orchestration—forming a foundation for data modernization and enabling low-latency ingestion in the cloud-native stack.

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How Hexaware's Strategic AWS Data & Analytics Capabilities Helped Solve Critical Challenges for the Transition

With AWS services, Hexaware addresses critical challenges in the transition to a new enterprise analytics environment, related to data transfer, connectivity, transformation, and real-time processing. Below are key areas that Hexaware additionally took on:

- **Data Transfer Complexity:** Ensuring smooth data transfer from various on-premises sources to Amazon S3 required handling diverse formats and security constraints (e.g., cross-account roles).
- **Upsert and Data Transformation Logic:** Implementing efficient upsert operations and data transformations within Amazon Glue required performance tuning to handle large data volumes without incurring excessive costs.
- **Real-Time Data Processing with Open Source:** Integrating real-time data ingestion from Kafka and syncing it with batch processing in a unified pipeline required careful orchestration to ensure data consistency.

- **Connectivity with Legacy Databases:** Even with firewall restrictions, we established secure and reliable Java Database Connectivity (JDBC) connections to on-premises databases within the AWS environment, such as Amazon Postgres, Amazon DB2, Amazon Aurora, and Amazon Redshift.

As clients like this US-based global airline look to embrace data modernization, Hexaware's IT service capabilities in data and analytics play a huge role in navigating the complexities of building modernized data architecture and transforming data infrastructures.



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Data Warehouse Modernization: Unified Enterprise Data Management, Cloud-Native ETL Design, and Cost Optimization

Data Architecture Benefits

- **Cloud-Native ETL Design:** Migrated from on-premises ETL tools to a fully cloud-native architecture using serverless components on AWS, enhancing flexibility, scalability, and operational efficiency.
- **Unified Data Management:** Centralized all incoming and processed data in Amazon S3, simplifying data handling across multiple source systems and supporting a unified data pipeline on AWS.
- **Cost and Resource Optimization:** Leveraged AWS Lambda and AWS Glue to eliminate infrastructure overhead and support cost optimization through scalable, on-demand processing.

Enterprise Analytics Benefits

- **30% Faster Time-to-Insight:** Enabled both batch and real-time ingestion within a modern data pipeline on AWS, accelerating analytics and reducing time-to-insight by 30%, facilitating faster, data-driven decision-making.
- **40% Cost Savings on Data Processing:** Achieved substantial cost optimization by migrating to AWS, eliminating on-prem hardware and legacy tools (like Informatica), and adopting cloud-native services.
- **50% Increase in Processing Capacity:** The AWS cloud transformation empowered automatic scaling to accommodate growing data volumes and new sources, all without requiring reconfiguration—delivering a highly scalable and flexible architecture.
- **25% Improvement in Data Quality and Reliability:** With robust workflows, automated error tracking, and modernized architecture, data modernization improved reliability and reduced manual intervention across the platform.



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Ready for the Future of Aviation Analytics with AWS?

The global airline carrier has successfully modernized its data warehouse and data pipeline with a new cloud architecture on AWS, achieving impressive cost savings and improved data processing efficiency. This transformation sets them up to tackle the next phase of airline data needs by enabling real-time analytics—key for boosting operational efficiency and enhancing customer service.

With a solid AWS cloud architecture, they can tap into big data analytics to personalize customer experiences, optimize pricing, and enhance decision-making. As a global airline operating in various markets, this shift not only strengthens their current capabilities but also equips them for future innovations in aviation.



About Hexaware

Hexaware is a global technology and business process services company. Every day, Hexawarians wake up with a singular purpose: to create smiles through great people and technology. With this purpose gaining momentum, we are well on our way to realizing our vision of being the most loved digital transformation partner in the world. We also seek to protect the planet and build a better tomorrow for our customers, employees, partners, investors, and the communities in which we operate.

With offices across the world, we empower enterprises to realize digital transformation at scale and speed by partnering with them to build, transform, run, and optimize their technology and business processes.

Learn more about Hexaware at
<https://www.hexaware.com>.

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