



Striim in Hybrid Cloud Environments - How Indium Can Help

A Whitepaper



Executive summary

Achieving data retrieval is merely the initial step, accounting for roughly a third of an organization's data management success. So, what encompasses the rest? With data generated at an unprecedented rate, there is the potential to harness it, optimize its performance in real-time, minimize storage usage and expense, and deliver decision-making insights, which drives the other half.

As enterprises expand their digital footprint across diverse cloud platforms and on-premises infrastructures, the demand for a groundbreaking platform to seamlessly integrate these disparate data realms becomes paramount.

Striim stands out in this landscape, offering a comprehensive view of data's integrity, quality, and value as it adeptly maneuvers through the maze of hybrid cloud ecosystems. Being an integral part of the streaming ecosystem, it is projected to reach around [USD 222.57 billion by 2032](#). As data governs the entire business system, Striim's significance and applicability to data-driven insights will help organizations mark their presence among users and industry leaders.

This whitepaper outlines the distinctive capabilities of Striim and the importance of real-time data integration. Dive in to discover how Striim can enhance your business's data potential. Explore how, in collaboration with Indium Software's unmatched expertise, Striim can propel your business's data capabilities to set new industry standards.

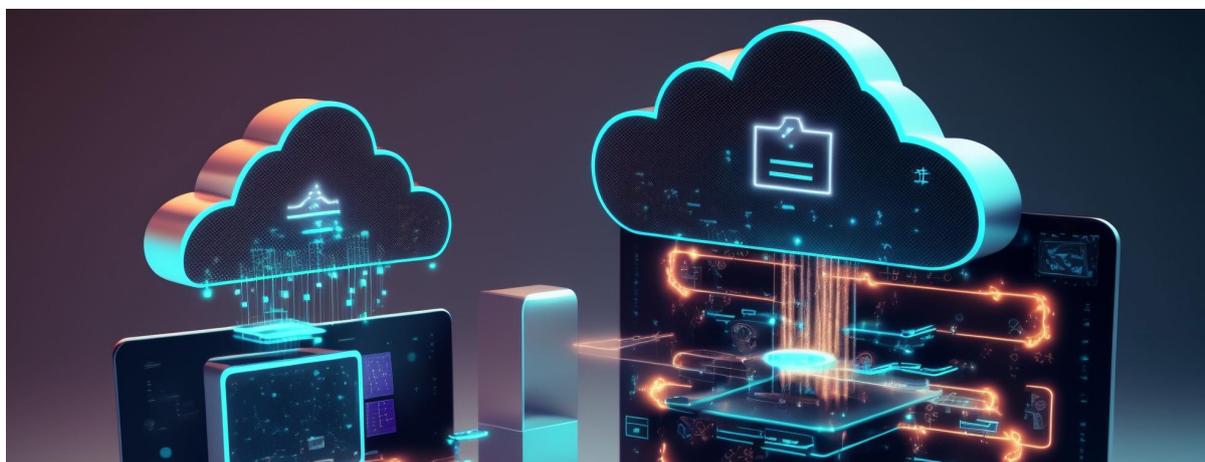




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Introduction

Fast forward to 2035, where intricate hybrid cloud technology governs the global healthcare system. This advanced framework combines on-premises data centers, situated at major hospitals and research facilities, with the expansive capabilities of international public cloud infrastructures. AI and ML algorithms built into wearable technology and medical equipment that collect data for analysis and integration are supercharging the healthcare system, from real-time patient monitoring to advanced diagnostics and treatment recommendations.

Striim integrates real-time data, including patient vitals, medical history, ongoing treatments, and more, from both on-premises (hospitals and clinics) and cloud-based platforms (like global disease trend analyzers). It reads this data to monitor patient health, predict potential health risks, and correlate it with global health data to identify emerging disease trends or outbreaks.

By analyzing the real-time insights, Striim suggests immediate actions like

- Alerts medical professionals to sudden changes in a patient's vitals, enabling a rapid response to potential health crises.
- Recommends adjustments to treatment plans based on real-time data analysis to prevent risky and emergency situations.
- Mobilizing resources, adjusting patient care protocols, and optimizing research efforts to combat emergencies.
- Anticipates healthcare challenges like aging populations or global pandemics and prompts preemptive measures such as ramping up vaccine production, diversifying medical supply chains, or enhancing telehealth capabilities.

This glimpse into Striim's envisioned future underscores its pivotal role and accentuates the transformative potential of real-time analytics. It's not just a window into what lies ahead; it's a testament to the platform's current prowess in harmonizing hybrid cloud integrations and analyses.



An overview of Striim in hybrid cloud architecture

Data, the modern currency, holds significant value only when read and analyzed effectively. With organizations migrating most of their data to the cloud, they also ensure that certain data remains on-premises, forming a hybrid cloud architecture. This architecture demands agile data accessibility and instantaneous integration between on-premises and cloud repositories.

Enter Striim, the leading streaming platform for organizations to effortlessly channel, refine, and dispatch voluminous streaming data, bridging disparate sources and destinations. Striim integrates robust delivery validation and vigilant data pipeline monitoring, ensuring the integrity and health of data streams. The question then arises: What elevates Striim as the gold standard for real-time data integration?

Non-intrusive change data capture (CDC)

Striim's implementation of CDC proficiently seizes real-time data changes and transfers them to the downstream system with fresh data, minimizing source database interruptions and bandwidth usage. Striim eliminates the need for batch job scheduling or maintenance windows for data synchronization. Instead, it proposes a dynamic streaming approach, streamlining the data integration continuum.

In-flight data processing

Striim's ability to identify, analyze, filter, and transform real-time data as it moves from source to destination helps with restructuring datasets, changing data formats, and washing out irrelevant data, thereby reducing transfer costs and additional storage. By combining streaming data with other datasets, adding extra details to the data is possible, enhancing its value. As data carries inconsistent information, errors, and anomaly patterns, refining and transferring them to the downstream system in the right format helps with immediate use without further transformation.



Complex event processing

Striim's potential to recognize sequences of events, such as system logs and transactional patterns from multiple sources, helps detect fraudulent activities and resolves a user experience issue within the streaming data. This helps address the issues or workflows of the past, enabling businesses to be proactive and informed in their operations.

Broad source and destination support

Striim's support for any IT ecosystem, ranging from fully on-premises to completely cloud-based or hybrid architectures, is exceptionally broad and beneficial. It connects to various databases, ingests data from application logs, connects with major cloud providers like AWS, Google Cloud, and Microsoft Azure, and captures data from streaming platforms like Kafka, JMS, and MQ. Delivering the captured data to a wide range of databases reduces the need to transform or alter it for cloud-native applications, data lakes, and other processes. Beyond the above, Striim can deliver data to various other systems, including file systems, search platforms, and more, bridging the gap and ensuring a unified streaming platform for diverse data integration.

Visualization & monitoring

Striim's offering to visualize data and monitor data pipelines through graphs, patterns, or other visual elements and alerts helps rectify issues before they escalate. The dashboard can be set up according to specific monitoring needs, where latency, error rates, data throughput, and more can be observed. Bring in the alert through email, message, or other integration if a certain threshold is crossed or an unusual pattern is detected, swiftly responding to issues and maintaining high-quality data integration and management in real-time environments.



The need for real-time data integration in hybrid cloud

Enterprise's choice of computing is heavily inclined toward hybrid cloud models, where they experience scalability and cost-effectiveness as in the public cloud model and reliability and high-security protocols as in the on-premises or private cloud model. With the hybrid cloud market expected to reach **USD 199.32 billion by 2033, at a CAGR of 166.6%** from 2023 to 2033, the significance of being cloud-native will pose a pressing challenge for organizations.

By adopting a hybrid cloud model, organizations look for seamless integration, transition, and data analysis. The following highlights the importance of a hybrid cloud model for organizations.

Rapid decision-making: Every business runs on decisions taken in split seconds to lead the market. Certain insights are detrimental for organizations to land on a particular decision as they can proactively react to market changes, customer demands, and customer experiences through real-time integration. To stay ahead of competitors and establish trust among customers, it is necessary to identify opportunities or threats and get them resolved within minutes.

Diverse data sources: As data is sourced from multiple sources, such as the Google Cloud platform, Azure, IBM Cloud platform, and on-premises data centers, it is in different formats, has a distinct consistency, and carries errors that need to be formatted or rectified before analyzing. With seamless integration, low latency is achieved, helping businesses stay relevant to new data that gives accurate insights.

Customer experience: Where customer data plays a significant role, it is essential to analyze user behavior, transactional actions, and customer preferences and address them immediately to deliver a personalized customer result that reflects all the touchpoints.



Cost efficiency: Resource allocation or utilization is critical to hybrid cloud computing. As more data from divergent sources gets stored, it is important to consider the resources for the data. With real-time integration, irrelevant data that doesn't hold any value or is in a discrete format can be eliminated, thereby reducing the cost spent on redundant data and its storage.

Security and risk management: Data is intertwined with threats and fraudulent activities that need specific attention for quick detection. As data travels in a hybrid architecture model, the chances of a breach are high. Real-time integration allows the data to be analyzed and rectified immediately without escalating fraudulent activity.

How Striim enhances the hybrid-cloud approach

Let's explore how Striim can be integrated into the aforementioned scenarios through the following instances.

Real-time inventory management control:

A premier e-commerce enterprise, operating on a hybrid cloud infrastructure, manages millions of products daily. Their sales platform resides on Oracle Cloud, the warehouse management system on Amazon Redshift, and the supplier database on Google BigQuery, all unified under Azure. As sales surge, real-time inventory adjustments become paramount. Leveraging Striim, the company integrates data across these platforms, ensuring instantaneous inventory updates. In the event of stock depletions, Striim automates procurement, connects with suppliers via AWS Lambda, and redirects orders to stocked warehouses. Through Striim's adept integration with Azure Blob Storage, Amazon S3, and Google Cloud Storage, the enterprise maintains up-to-the-minute inventory accuracy and positions itself as a reliable e-commerce platform, giving it a significant edge over competitors.



Omnichannel sales analysis:

A global retail conglomerate with a presence spanning physical stores, mobile apps, websites, and third-party marketplaces grappled with disparate sales data formats. While on-premises systems registered sales in SQL, Azure's online sales were in NoSQL, and AWS's mobile analytics were captured in JSON, leading to data inconsistencies. To address this, real-time data streaming was implemented to centralize information in the cloud. Subsequently, Striim was deployed to streamline and standardize this diverse data, ensuring analysis readiness. This strategic approach provides immediate sales insights and informed marketing initiatives, optimizing the sales trajectory.

Personalized streaming recommendations:

A premier streaming service provider aspired to elevate user experience by seamlessly personalizing every touchpoint of the viewer's journey. With infrastructure spanning AWS for content delivery, Azure for analytics, and GCP for machine learning and recommendations, uniform data analysis posed a challenge. To address this, they deployed Striim, integrating and processing data in real-time across all platforms. This approach enhanced viewer engagement and loyalty and optimized the recommendation algorithm, ensuring subscribers consistently encountered content tailored to their preferences.

Storage optimization solution:

GlobalBank, a leading multinational institution, manages vast daily transactions, customer analytics, and regulatory reports across AWS, Azure, and GCP. Confronted with data redundancies and inefficiencies, the bank integrated Striim, which processes the data in real-time by filtering redundant data and removing duplicates. This real-time processing solution retained only pertinent information, optimizing storage costs.



Data threat and fraud detection:

A global travel platform, manages its transaction logs on IBM Cloud, user profiles on Oracle Cloud, and collaborates with third-party partners via Azure. Given the sensitive nature of passenger data, the platform faced heightened cybersecurity risks. To fortify security protocols and detect fraudulent activity, the IT infrastructure recommended the Striim platform. Through its real-time integration, the company scrutinized booking transactions on IBM Cloud, user activity logs were kept under surveillance for suspicious activity, and data interactions with third-party travel partners on Azure were vetted. This proactive approach halted security breaches and secured passenger accounts and information, bolstering trust and cementing a strong customer bond.

Essential data considerations for using Striim in a hybridcloud environment

As hybrid cloud architectures gain traction for their scalability, reliability, and versatility, organizations often overlook the intricacies of data integration, real-time processing, and efficient data storage. While Striim emerges as a formidable solution to these challenges, harnessing its full potential within the hybrid cloud paradigm is imperative.

To achieve this, the following data considerations must be meticulously addressed. By doing so, enterprises can ensure a robust configuration and deployment of Striim, thereby enhancing data throughput, fortifying security, and ensuring uniformity across varied IT infrastructures.



Data integration strategy: With Striim gathering momentum, it is vital to analyze the source of data, its format, and its compatibility across all platforms. Recognizing and strategizing this will help in seamless real-time data integration, ensuring a faster implementation process, thereby reducing data silos, improving data quality, and ensuring efficient mapping, transforming, and reporting of data.

Data movement & synchronization: Prior planning in data processing, such as real-time streaming or batch processing, along with defining acceptable latency levels and utilizing CDC, ensures timely decisions are taken for sensitive data, reduces the risk of the data going unnoticed or out of date, and minimizes the network and storage usage.

Data transformation & enrichment: As data transits in a hybrid cloud environment, data transformation and enrichment are essential to deliver quick insights and enhance the accuracy and quality of the data. Also, enriching the data with significant values assists in a more defined decision-making process.

Data security & privacy: With data traveling from different sources, fortifying them through encryption, access control, or data masking helps ensure 100% accurate and transparent data. Secured and reliable data is what organizations look for.

Data backup & recovery: Before integrating data, a backup and recovery formula is necessary in case of any hardware or software failure. To reduce downtime, a backup plan helps with business continuity and expenses.



Indium Software

- The proud partner of Striim

A fine approach to data integration and streaming is bestowed on organizations by Indium Software through its partnership with Striim. The company ensures a seamless transition from initiating the entire Striim set-up to offering training for employees to draw output from the platform effectively. Through expert guidance and professional support, a well-defined implementation strategy is adopted to assist organizations in utilizing the data at its maximum efficiency.

From Oracle on-premises to Google Cloud: A Striim success story by Indium

Consider the case study where one of their clients utilized Striim for Real-time data replication from Oracle on-premises databases to the Google Cloud platform.

A global banking and financial service provider catering to the vast majority of user data generated through daily transactions and interactions finds handling and maintaining the database with such massive data generation tedious. They also decided to opt for a cloud migration from an on-premise Oracle Cloud to a Postgres database on the Google Cloud Platform while limiting direct access to the database. However, certain challenges were met in the integration and analytics journey.

Let's primarily infer the challenges and then look into the solutions delivered by Indium Software by capitalizing on Striim's functionality.



Challenges encountered

- Diverse data needs to be addressed well before cloud migration.
- Analysis of the data for quality redundancy to avoid maximum storage consumption.
- Secured data migration by not accessing the database.

Solutions delivered

Indium Software, being a prime Striim partner, leveraged the streaming platform with its professionals and offered the following solutions:

- Primarily, they set the platform from the source Oracle database to the target Postgres database on the Google Cloud Platform.
- Implementation of CDC ensured real-time updation of data changes, thereby reducing the replication of data and its storage.
- Striim agent was employed to bridge the gap for third-party access to the database.
- Incorporated various metrics and live dashboards for effective monitoring and tracking of data.

Results obtained

- Reduced the time consumption for data migration.
- Secure access was successfully supported for third-party applications.

Key metrics

- 90% less time consumption was achieved for cloud migration.
- 87% increase in efficiency, and data replication demonstrated significant improvement.
- 95% increase in security acquired while accessing the database.



Indium Software's guidance for comprehensive Striim adoption and utilization

Ready to harness the power of the Striim platform but unsure where to start? Let Indium Software guide you through the seamless adoption and efficient utilization of Striim in your IT environment with comprehensive strategies that will have your organization up and running with real-time analytics in no time.

End-to-end Striim set-up:

Ensure your operating system, network setup, and storage system are compatible with Striim's capabilities. At Indium Software, their expert team will efficiently handle the installation process and configure the platform with database and security settings, including metadata repositories, user authentication, and authorization. Once the setting and configuration work is done, connecting to diverse data sources, such as cloud platforms, data centers, log files, etc., through Striim's pre-built adapters is achieved. If capturing data changes is required, the CDC settings and monitoring of data replication will be initialized.

Now that the data stream is defined, the professionals capture and process the data in real-time by filtering, enriching, detecting, and transforming. Employing Striim's capabilities, they set up CEP to analyze streaming data for patterns, sequences, or anomalies. Once processed, the data is ready with an aligned data structure to reach the target source, such as data lakes, data warehouses, etc., with the same Striim adapters.

They ensure to set up dashboards for real-time monitoring and alerts for latency checks, and ensure logging is configured for auditing and troubleshooting. Recognizing the dynamic nature of data volumes, they consider adding more nodes to the Striim cluster to distribute the workload. Regular reviews of configurations, backup recovery strategies, performance metric evaluations, and configuration optimizations are all part of the professional touch, guaranteeing efficient data processing and transfer.



Striim app development:

In the realm of app development, Indium Software stands at the forefront, harnessing the power of the Striim platform. This isn't just about coding; it's about optimizing the development lifecycle for unparalleled excellence.

The team begins by delving deep into Striim's architecture, understanding its capabilities, user interface, and server agents. Recognizing the benefits of a distributed system, Indium Software capitalizes on Striim's inherent scalability.

The process is systematic: design the data flow, pinpoint the data source and target destination, and understand the volume, velocity, and variety of data. With Striim's in-built adapters, real-time processing becomes a streamlined endeavor. Customization is key, and with Striim, developers can integrate external Java libraries, enhancing processing capabilities for specific tasks.

Before deployment, they conduct rigorous testing in a sandbox environment to ensure operational efficiency. Continuous monitoring tracks data throughput, latency, and overall performance. Striim's scalability comes into play as demands grow, allowing for the addition of nodes to the cluster, ensuring balanced loads, and optimizing application performance.





Conclusion

In conclusion, the symbiotic relationship between data and decision-making is not just pivotal—it's transformative. The true potential of data is unlocked not just by its acquisition but also by the efficacy of its integration and transformation into actionable insights. Striim, renowned for its adeptness in real-time data integration and unparalleled adaptability, is fast becoming an indispensable tool for organizations navigating the complexities of the hybrid cloud landscape.

Recognizing this, Indium Software, a premier digital engineering service provider, has demonstrated unparalleled data integration and streaming expertise. Their collaboration with Striim ensures seamless data integration across diverse sources and fortifies data security. Furthermore, Indium Software's proficiency extends to configuring Striim nodes and clusters, ensuring high availability and scalability tailored to organizational needs. As we look ahead, it's clear that the strategic alignment of Striim and Indium Software's expertise will be pivotal in steering businesses toward data-driven success.



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