High-Speed Data Analytics on GCP

Think Big with Kyvos' AI-Powered Smart Aggregation Technology

Abstract

In this whitepaper, we will discuss the analytical challenges and the need for OLAP in the cloud. We will also explain how Kyvos' Smart AI-powered aggregation technology combines the benefits of the scalable GCP infrastructure with analytics acceleration, helping you achieve interactive analytics on extremely large datasets.

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Overview

Today, most organizations are processing vast volumes of data to drive better decisions across the enterprise. The goal is to find those nuggets of competitive advantage and turn them into business opportunities as quickly as possible. The need for speed and scale is driving more and more organizations to turn to the cloud for data storage and analytics.

Among these cloud platforms, Google Cloud Platform provides a robust framework that is not only scalable and flexible but also cost-effective, revolutionizing the way the data is stored, processed and utilized. However, achieving optimal analytics performance on data at a massive scale is one of the biggest cloud analytics, even for GCP.

The Rise of Cloud Analytics

The initial skepticism is over, and the attitude toward cloud computing has transformed significantly over the past few years. Deployment trends show steady growth in cloud analytics, with several organizations citing substantial benefits over traditional on-premises implementations.

Recent changes in the global business landscape, such as an increase in work-from-home scenarios, tightening of IT budgets, and more, will further accelerate workload migrations to the public cloud. The need for collaboration is much higher today than ever before, and the cloud comes with some inherent advantages that make it a uniquely suitable infrastructure for building a self-service data platform.

The cloud revolution has brought in a new era and a gold rush of opportunities. It helps enterprises deal with the explosion of digital data that grows each day. Economies of scale and pay-as-you-go models are the key drivers for cloud migration. For businesses, this translates into competitive products and cheaper services.

Cloud analytics is not a new paradigm anymore; it is the only sustainable analytical model for the future.

BI Challenges & Need for OLAP on GCP

As per a study conducted by HG Insights, approximately 84% of Google Cloud customers use GCP exclusively, while 16% use other cloud platforms alongside GCP. In light of this statistical insight, its evident that most organizations prefer GCP for their cloud computing needs. Leveraging GCP's robust infrastructure, these businesses aim to optimize their data accessibility and usability. However, even with all the advantages of GCP, businesses still face some challenges, especially when it comes to managing the vast scale of data. Once the data lands in the cloud, the next challenge is making it available and accessible to users, easy to use and support interactive analytics.

To solve these challenges, organizations often tap into the power of tried-and-tested OLAP technologies to harness the full potential of their data within the GCP environment. OLAP is a powerful concept that involves the processing of data into multidimensional data models and then querying them to get faster results.

However, when traditional OLAP solutions are brought into the world of GCP, they fail to perform as they cannot deal with the scale of today's data and the explosion of cardinality and dimensions, and the large variety of data sources.

Most available OLAP solutions work on the principle of common queries or partial aggregation. The known queries are served well, but response times are typically slow when new questions are asked. Also, in-memory OLAP brings in limitations due to the available memory. As a result, scalability becomes expensive, and performance suffers for higher concurrency.

Kyvos' AI-Powered Smart Aggregation Technology Designed for GCP

An innovative approach is to create an OLAP solution directly on GCP, combining the benefits of scalable cloud infrastructure with analytics acceleration.

Today, enterprises need to deal with massive volumes of data coming in from various sources such as traditional point-of-sale systems, e-commerce sites, social media platforms, or IoT sensors streaming data in real-time. Transplanting the same technology that works for smaller datasets can neither sustain modern data workloads nor support complex business use cases.
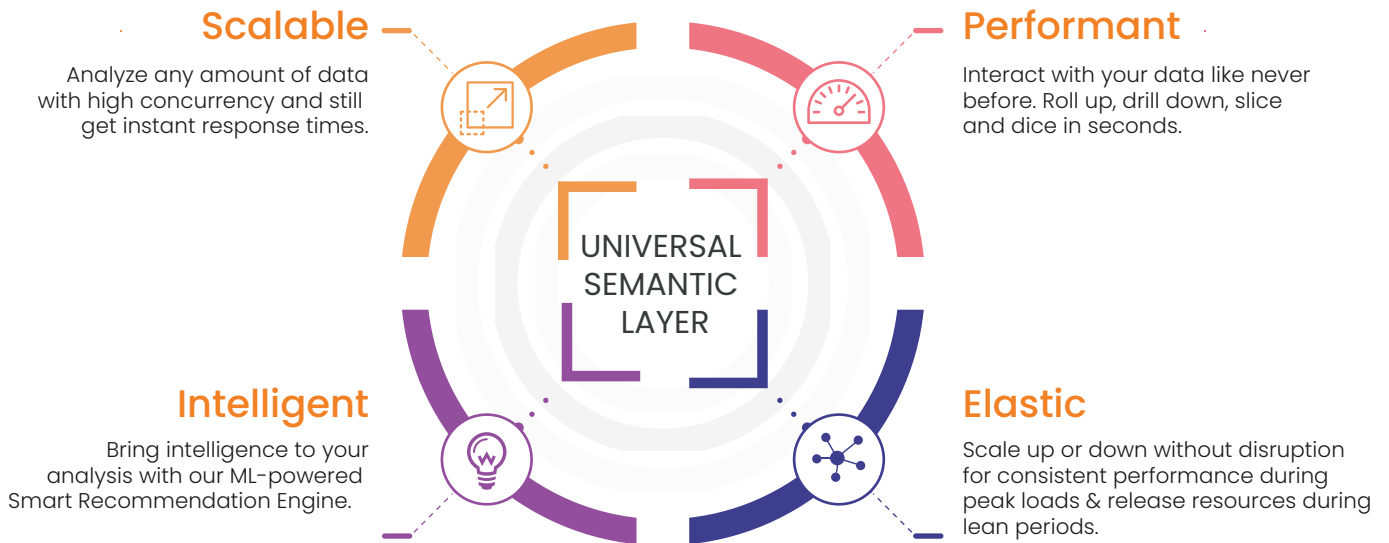
To solve these challenges, Kyvos has developed an innovative technology, 'AI-powered smart aggregation technology that can deal with today's data and scale effortlessly for future data requirements. Our advanced algorithms leverage the computing capacity of GCP to process massive volumes of data across multiple dimensions and build highly optimized data models.

These data models are stored in GCP, taking advantage of its flexible storage and providing instant, interactive access to massive data. Existing analytics tools can connect to the Kyvos analytics acceleration layer in GCP, enabling users to work seamlessly with enterprise data without compromising its size and complexity.

Kyvos' AI-powered smart aggregation technology leverages the scalability and flexibility of GCP to build massively scalable data models, eliminating the limitations of traditional OLAP or in-memory solutions. It can handle any scale or complexity of data to meet the growing analytical needs of an enterprise.

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Scalable

One of the key differentiators of Kyvos is advanced algorithms that enable aggregations on billions of rows by containing the combinatorial explosion that happens with OLAP at this scale. AI-based smart aggregation can scale out transparently to create data models on more data as it is added to the analytics environment. Users can include as many dimensions and measures as needed in the data models depending upon their business needs. Linear scalability enables thousands of users to query the data models without impacting performance.

Scalable
Analyze any amount of data with high concurrency and still get instant response times.

Performant
Interact with your data like never before. Roll up, drill down, slice and dice in seconds.

UNIVERSAL SEMANTIC LAYER

Intelligent
Bring intelligence to your analysis with our ML-powered Smart Recommendation Engine.

Elastic
Scale up or down without disruption for consistent performance during peak loads & release resources during lean periods.

Performant

Kyvos' data models are processed data models are processed and materialized for speed. As all the combinations are processed in advance, they provide instant responses to queries across hundreds of dimensions and measures. Users can query, filter, slice and dice, drill down, and explore extremely large datasets and get quick answers to all their business questions. All queries, standard or ad-hoc, old or new, are served equally fast. Robust querying mechanism and intelligent query engines return most queries in less than a second.

Unified Semantic Layer on GCP

Kyvos' modern technology creates a Universal Semantic Layer on the GCP that not only enables complex data modeling at a massive scale but also delivers high performance. Users can define their metadata and business logic in one place, creating a unified view of all enterprise data. They can define relationships between data and then design and create multidimensional data models using simple drag and drop functionality. Intuitive, code-free, visual UI reduces the dependency on IT teams for designing data models and eases the migration of existing semantic models to GCP.

Intelligent

In OLAP, query performance depends on how the data is processed. Therefore, effective data model designs are extremely important to achieve the desired performance. ML-powered Smart Recommendation Engine brings in the intelligence needed to create smarter aggregates. It profiles data and studies query patterns to provide intelligent recommendations that simplify the data modeling process and enable users to optimize their designs without needing technical expertise.

Elastic

The ability to scale up and down quickly is vital for the success of any cloud initiative. Kyvos' smart aggregation technology delivers cost-effective analytics on GCP by combining performance with elasticity. Depending on the expected load, querying capacity can be increased or decreased without disruption. You can provision your cluster to scale up at specific pre-set times when the demand is high and then scale in to release those resources when not needed.

With no data movement, Kyvos' AI-powered smart aggregation technology technology maintains native data security through the data models at the storage layer itself. Enterprise-class data security at multiple levels, including row and column level security, ensures that users only see what they are authorized to see.

The Kyvos Advantage

- Data modeling on GCP
- Autoscaling to save costs
- Complex data modeling at a massive scale
- Incremental data model refreshes for quick access to new data
- Graphical code-free data modeling
- Smart data modeling Recommendation engine
- Workflow-based quick data analysis
- Native data security at the storage layer itself

Closing Thoughts

Achieving interactive analytics becomes critical as more and more organizations move their data to GCP. Kyvos' AI-powered smart aggregation technologycombines the flexibility and agility of GCP with the power of OLAP, delivering the speed-of-thought analytics needed while dealing with massive data on GCP. No matter what industry you're in, AI-powered smart aggregation technology can help transform your business, leading to better customer understanding, more targeted marketing, efficient operations, and increased profitability.

About Kyvos

Kyvos is a modern, cloud-native, high-speed data analytics platform that enables sub-second querying on massive datasets. The platform's universal semantic layer democratizes data for all users across the enterprise, enabling self-serve analytics. Its AI-powered smart aggregation technology modernizes advanced analytics, while reducing the time and cost to extract insights. With Kyvos, instantly analyze data at any scale using the visualization tool and underlying cloud platform of your choice.

To learn more, request a demo now.

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