



# Quisine Analytics

## System Upgrade Proposal Report - Enhancing Quisine Analytics' Data Processing Capabilities

### Executive Summary

Quisine Analytics must strengthen its data processing infrastructure to ensure the successful launch of the maple-bacon poutine donut and future data-driven innovation. This proposal recommends scalable, cost-effective, cloud-native solutions tailored to current performance gaps. These upgrades will improve real-time analytics, reduce latency, and support scalable, location-specific insights, empowering teams to make faster, smarter decisions before, during, and after high-profile product campaigns.

### 1. Current System Overview

Metric	Current	Target
Data Processing Speed	200 transactions/sec	≥ 400 transactions/sec
Real-Time Analysis Ratio	70%	≥ 95%
Data Throughput Capacity	1.5 TB/hour	≥ 3 TB/hour

These benchmarks highlight the gap between Quisine’s current capabilities, and its data performance goals, especially during major product rollouts.

### 2. Key Challenges

- Inability to scale processing and analytics during high-demand periods (e.g., product launches)
- Latency in accessing transactional and customer feedback data
- Fragmented architecture with limited integration between storage, processing, and visualization
- Limited adoption potential due to complex or unfamiliar systems

### 3. Proposed Technology Enhancements

#### A. Data Storage & Warehousing

These solutions support both high-volume analytical queries and everyday operational reporting:

Technology	Purpose	Justification
Google BigQuery	Scalable cloud data warehouse	Enables fast querying across large datasets with a pay-as-you-go model; ideal for sales and feedback analytics.
Azure SQL Database	Managed SQL-based storage for transactional data	Provides familiar interfaces, strong reliability, and seamless Power BI integration for reporting workflows.
Azure Blob Storage	Centralized raw data storage	Affordable storage for structured and semi-structured data; supports data ingestion from multiple sources.

These platforms together ensure that both analytical and transactional data are managed efficiently, securely, and with full compatibility for future expansion.

#### B. Real-Time Data Handling

Technology	Purpose	Justification
Azure Stream Analytics	Real-time ingestion and processing	Lightweight, cloud-native stream processing that handles transaction spikes without the complexity of enterprise tools.

Stream processing ensures high responsiveness during launches and peak periods, enabling real-time decision-making with minimal system overhead.



### C. Visualization & Business Intelligence

Essential tools for translating data into actionable insights for non-technical users:

Tool	Purpose	Justification
Power BI	Dashboards and performance tracking	Already familiar to staff, it integrates smoothly with both SQL and cloud-based sources for live and historical views.
Alerting & Auto-Refresh Scheduling	Maintain operational visibility	Ensures continuous insight into campaign metrics, sales spikes, and real-time exceptions.

The proposed system will enable real-time monitoring of product-specific performance metrics—such as donut sales volume, regional adoption rates, and customer sentiment. Dashboards will update automatically, supporting agile marketing, fast inventory decisions, and mid-campaign adjustments without IT intervention.

#### 4. Implementation Roadmap

Phase	Timeline	Key Activities
Phase 1: Setup & Storage	Week 1–2	Deploy SQL-based storage and data warehouse; migrate existing datasets
Phase 2: Streaming Integration	Week 3	Connect POS, reviews, and traffic logs to stream processors
Phase 3: Dashboard Rebuild	Week 4	Create live dashboards with Power BI and enable alerting + refresh mechanisms
Phase 4: Testing & Enablement	Week 5–6	Train staff, simulate launch load, monitor performance

#### 5. Tool Performance Benchmarks

Platform	Benchmark	Why It Matters
Google BigQuery	Handles petabyte-scale datasets with sub-second response for cached queries	Enables fast analytics on sales, reviews, and trends
Azure SQL Database	99.99% availability, supports >100,000 transactions/min, automatic scaling	Ideal for transactional data like order logs and inventory
Azure Blob Storage	Durable, scalable to exabytes; designed for 99.99% durability	Stores raw logs, files, external input for analysis
Azure Stream Analytics	Capable of 1M+ events/sec; sub-second latency in real-time dashboards	Supports timely insight during promotions or high-traffic events
Power BI	Refreshes as often as every minute (DirectQuery); full integration with Azure/SQL/BigQuery	Delivers real-time monitoring and cross-location visibility

#### 6. Cost-Efficient and Practical Considerations

The proposed tools are selected not only for performance, but also for cost-efficiency and ease of adoption within Quisine Analytics’ operational context:

- Pay-as-you-go pricing for BigQuery, Azure Blob Storage, and Stream Analytics ensures scalability without large up-front infrastructure costs.
- Azure SQL Database and Power BI leverage staff’s existing familiarity with SQL and dashboarding tools, reducing training needs.
- Cloud-native architecture minimizes the need for internal IT management, with auto-scaling, built-in security, and global accessibility.
- Minimal integration friction due to strong interoperability between Microsoft and Google ecosystem tools.

Together, these choices lower operational overhead while providing the flexibility and speed required for growth and real-time operations.



7. Risks and Mitigation Strategies

Risk	Mitigation Strategy
Migration delays	Use a phased approach; run old and new systems in parallel during transition
Staff resistance to new tools	Provide short, use-case-driven training sessions with hands-on dashboards
Unexpected cloud costs	Set up usage alerts, auto-scaling rules, and cost caps within each cloud service
Data compatibility or access gaps	Conduct early system testing to validate schema compatibility and ensure smooth integration

8. Expected Outcomes

The implementation of the proposed data architecture is expected to deliver the following measurable benefits:

- **Real-time analytics availability** improved to  $\geq 95\%$ , ensuring timely insights during product launches and operational shifts.
- **Data throughput capacity** scaled to support  $> 3$  TB/hour during peak usage, eliminating performance bottlenecks.
- **Enhanced regional decision-making** through interactive dashboards, automated refreshes, and alert-driven visibility.
- **Reduced operational friction** by replacing manual data handling with seamless cloud-based pipelines and reporting tools.

9. Conclusion

This upgrade proposal offers Quisine Analytics a practical, high-impact path toward real-time, data-driven operations. By choosing familiar, scalable, and cloud-native tools, the company can achieve faster insights, smoother product launches, and stronger regional responsiveness—without overengineering or exceeding budget.

The recommended architecture supports both analytical and transactional data management, enables real-time responsiveness with minimal IT overhead, and equips teams at all levels to act confidently on live data. This foundation not only supports the current maple-bacon poutine donut launch but ensures long-term adaptability as Quisine continues to innovate and expand.