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Strengthening Cloud Data Infrastructure Migration and Observability for Celes to AWS

Executive Summary

Celes, a leading Latin American retail intelligence platform, helps top-tier retailers optimize supply chains, pricing, and product availability in real time. With rapid expansion and increasing platform complexity, Celes made the strategic decision to migrate their infrastructure from a multi-cloud setup to AWS, aiming for enhanced performance, security, and operational simplicity.
Following a successful Phase 1 deployment that laid down a robust AWS Landing Zone and Kubernetes (EKS) foundation, Phase 2 focused on extending platform capabilities with data lakehouse migration from another cloud provider to AWS, enhanced observability, secrets management, and event-driven autoscaling—all delivered by Binbash using modern, open-source, and AWS-native tools.

Customer Challenge

Following the successful deployment of a secure and scalable AWS Landing Zone and Amazon EKS cluster, Celes sought to:

- Celes needed to enhance data infrastructure, observability, and scaling—while seamlessly migrating from another cloud provider to AWS without disruption.
- Implement a high-performance Lakehouse architecture to handle structured and semi-structured data efficiently.
- Introduce observability tools to monitor and troubleshoot the Kubernetes environment effectively.
- Manage secrets securely within a complex and fast-paced development ecosystem.
- Enable dynamic workload scaling based on event triggers, to ensure cost efficiency and application responsiveness.

These challenges emerged as Celes expanded their development efforts and began integrating more data-intensive and event-driven workloads.

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Celes is a leading AI platform in Latin America that transforms how retailers and distributors manage their supply chains. With a full suite of solutions, it automates purchasing and distribution using accurate demand forecasting. From inventory optimization and stock transfers to replenishment and analytics, Celes lets businesses manage operations efficiently on one platform. It helps reduce waste, avoid stockouts, and boost profitability through automation and user-friendly tools.

Designed for fast implementation and scalability, Celes adapts to existing workflows and delivers measurable results from day one. Trusted by major brands, it continues to lead digital transformation in retail and consumer goods across the region.

What impressed me most was their rigorous DevOps discipline combined with deep AWS expertise. From day one, the project was laid out in a crystal-clear SOW with highly detailed tasks, and every deliverable was accompanied by well-structured, easy-to-understand documentation—making onboarding and handoffs seamless.

David Florian - CTO

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Solution

In Phase 2, **binbash** extended the AWS-native platform built in Phase 1 with a focus on data migration from another cloud provider to AWS, observability, security, and elasticity. The solution included the deployment of a portable Lakehouse architecture, robust Kubernetes monitoring, identity-based secrets management, and event-driven autoscaling.
All services were provisioned via Terraform using the open-source Binbash Leverage™ reference architecture, which accelerated implementation while ensuring compliance with the AWS Well-Architected Framework.

Architecture Highlights

- **Data Lakehouse Migration:** Migrated data services from another cloud provider to a new lakehouse built with DBT, AWS Glue Catalog and StarRocks on Amazon S3 and EKS.
- **Monitoring Stack:** Deployed Prometheus, Grafana, and AlertManager for metrics; Fluent-Bit, OpenSearch, and Kibana for log aggregation.
- **Secrets Management:** Implemented OpenBao in EKS to securely manage sensitive credentials and encryption keys.
- **Autoscaling with KEDA:** Enabled autoscaling—including scale-to-zero behavior—based on real-time metrics and HTTP workloads, to handle StarRocks service load.

Key Components of the solution

- **StarRocks + dbt + AWS Glue Data Catalog** Combined StarRocks' high speed analytical processing with dbt's declarative, versioned transformation workflows, all curated through AWS Glue Data Catalog as your external metadata layer - force data governance, and orchestrate ELT pipelines that deliver fresh, trusted insights at scale and enabling near real-time insights from raw and refined datasets.
- **Prometheus & Grafana** Deployed in EKS to capture and visualize time-series metrics with kube-state-metrics, node-exporter, and preconfigured Grafana dashboards.
- **OpenSearch & FluentBit (EFK Stack)** FluentBit collected logs at the node level and sent them to OpenSearch (AWS-managed), where Kibana offered visualization and analysis tools.
- **OpenBao** Provided a robust secret management layer, offering CLI, UI, and API access for encrypted, identity-based credential storage within Kubernetes.
- **KEDA with HTTP Autoscaler Add-on** Supported autoscaling based on metrics like queue length or API traffic, with scale-to-zero functionality for idle resources, saving compute costs.

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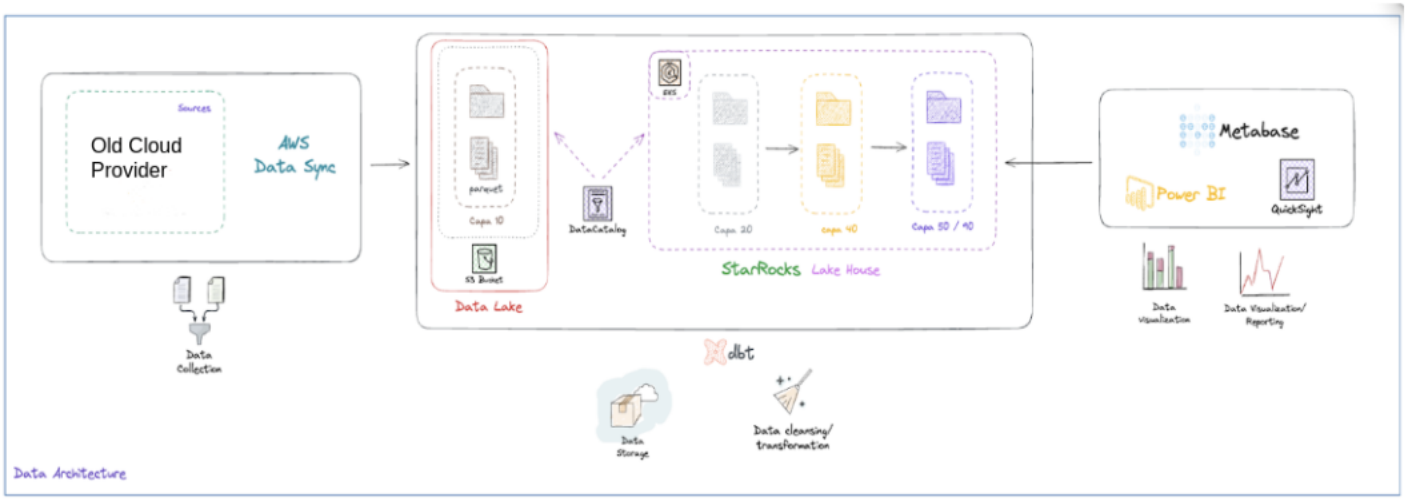

Results

The project delivered tangible technical and strategic benefits:

- Accelerated analytics capabilities with a cloud-native, scalable Lakehouse.
- Full observability over cluster performance and application health via unified monitoring and logging.
- Improved security posture with identity-based secrets management and encrypted storage.
- Event-based scaling increased cost efficiency and resource utilization in Kubernetes workloads.
- Operational maturity through GitOps-friendly automation and enhanced DevOps workflows.

The AWS Startups Program again supported the engagement financially, covering a significant portion of the implementation cost.

Key Milestones

Lakehouse Deployment Delivered a portable StarRocks + DBT solution on Amazon S3 and EKS. Migrating data from other cloud provider services to AWS.

Observability Stack Activation Deployed Prometheus, Grafana, and OpenSearch stack with private endpoints and cluster node integration.

Secrets Management (OpenBao) Installed and configured OpenBao in the EKS cluster with support for future integration with additional workloads.

Autoscaling with KEDA Leveraged KEDA to enable a scalable architecture for StarRocks, allowing the system to dynamically respond to high data processing loads.

Conclusion

By migrating from a fragmented cloud setup to a fully integrated, AWS-native infrastructure, Celes has unlocked new levels of agility, visibility, and scalability. With Binbash's expert guidance and automation-driven approach, Celes now runs on a future-proof foundation—ready for continued innovation and growth. The successful migration of key data infrastructure from a previous cloud provider to AWS was a critical milestone, enabling Celes to consolidate operations and modernize its platform without disruption.

Binbash's use of the AWS Well-Architected Framework, combined with open-source tooling and Infrastructure-as-Code, ensured that every element of the solution was secure, scalable, and maintainable from day one.