CASE STUDY

improving

Ottawa Police Services

PROJECT

Accelerating Intelligence-Led Policing Through Data Migration

OVERVIEW

Improving collaborated with the country's leading law enforcement organization to enhance their data infrastructure by migrating from Cloudera to Google Cloud Data Services. This project aimed to reduce operational costs, improve data accessibility, and leverage advanced analytical tools. The migration process involved using various Google Cloud tools to streamline data pipelines and ensure a scalable, efficient solution for OPS.

BUSINESS PROBLEM

Client faced significant challenges with their existing data infrastructure, reliant on Cloudera, which incurred high operational costs and frequent system failures. The monthly expenditure on Cloudera's platform licensing was approximately $50,000, leading to unsustainable financial pressure. Additionally, the limitations in scalability and poor integration of Cloudera's tools hindered OPS's ability to perform advanced data analysis and real-time reporting, essential for their intelligence-led policing initiatives.

OUR APPROACH

To address these issues, Improving proposed migrating OPS's data infrastructure to Google BigQuery, complemented by other Google Cloud tools like Dataflow, Cloud Scheduler, and Cloud Workflow. The strategy involved replacing Cloudera and Stream Sets, which managed ETL pipelines, with BigQuery's more advanced and cost-effective alternatives. We also ensured seamless integration with OPS's existing analytics tools like Power BI, preserving their current dashboard mechanisms while vastly improving the backend data processes.

BUSINESS BENEFITS

- **Cost Reduction**: Significant savings by eliminating Cloudera's $50,000/month licensing fees, reducing operational costs by a substantial margin.
- **Improved Resiliency**: Enhanced system stability with fewer failures and better error handling through Google Cloud's robust infrastructure.

- **Scalability**: Greater scalability with BigQuery's usage-based pricing model, allowing OPS to efficiently manage and analyze large volumes of data.
- **Better Integration**: Seamless integration with existing tools and the ability to leverage advanced Google Cloud services for more comprehensive data analysis.
- **Enhanced Data Accessibility**: Improved accessibility and usability of data for OPS, facilitating faster and more accurate decision-making.
- **AI Capabilities**: Potential for advanced AI-driven analysis, enabling OPS to gain deeper insights and predictive capabilities.

TECHNOLOGIES AND METHODOLOGIES USED

- **Google BigQuery**: Central component for data storage and analysis, replacing Cloudera.
- **Data Migration Service (DMS)**: Utilized for real-time replication and migration of data from on-prem databases to Google Cloud.
- **Dataflow**: Employed for managing ETL processes and scheduled data queries.
- **Cloud Scheduler & Cloud Workflow**: Used for orchestrating and automating data processing tasks.
- **Power BI**: Maintained for data visualization and reporting, integrated with BigQuery.
- **Stream Data Stream**: Implemented to facilitate real-time data streaming from PostgreSQL and SQL Server to BigQuery.

PARTNERSHIPS

Improving worked closely with Google Cloud throughout the project. Google provided valuable insights and validation for our migration strategy, ensuring our proposals were aligned with their best practices and optimized for OPS's needs. This collaboration ensured a smooth transition and leveraged Google's expertise to enhance the project's outcomes.

LESSONS LEARNED

1. **Effective Cost Management**: Migrating from legacy systems like Cloudera to modern cloud solutions can yield significant cost savings.
2. **Scalability**: Cloud-based solutions offer superior scalability and flexibility compared to traditional on-premise systems.
3. **Integration**: Seamless integration of new technologies with existing tools is crucial for user adoption and operational continuity.

4. **Advanced Tooling**: Leveraging advanced cloud tools can dramatically improve data processing efficiency and capabilities.
5. **AI Potential**: Integrating AI capabilities can provide substantial benefits in terms of data analysis and decision-making.
6. **Collaborative Efforts**: Close collaboration with technology partners ensures adherence to best practices and enhances project success.

CONCLUSION

The successful migration of OPS's data infrastructure to Google BigQuery demonstrates Improving's expertise in executing complex data migration projects. Our approach not only reduced operational costs but also provided OPS with a scalable, resilient, and future-proof data platform. The enhanced data accessibility and integration with advanced analytical tools enable OPS to perform more effective intelligence-led policing, ultimately improving public safety and operational efficiency. This project highlights our ability to deliver tailored, impactful solutions that drive significant business value for our clients.