CASE STUDY

improving

Costco

PROJECT

Modern GDX Platform On Google Cloud

OVERVIEW

Costco, the third largest retailer in the US and the largest wholesale retailer in the world, embarked on a journey to modernize its development platform. The goal was to migrate from a fragmented Azure infrastructure to a unified and efficient platform on Google Cloud Platform (GCP). This project aimed to enhance scalability, reliability, and agility, especially in preparation for the busy holiday season. Improving played a pivotal role in designing and implementing this new platform to support Costco's cloud-native applications.

BUSINESS PROBLEM

Costco faced significant challenges with its existing Azure infrastructure, which was fragmented and inefficient. The company had two different platforms that added to operational costs and hindered development agility. Deployments required rebuilding the entire platform, which delayed time to market and increased overhead. Additionally, the existing infrastructure's lack of scalability and reliability posed a risk, especially during peak shopping periods like Black Friday.

OUR APPROACH

Improving's strategy revolved around creating a unified, robust, and scalable platform on GCP. We mapped existing Azure services to their GCP equivalents, ensuring a seamless transition. The team focused on automating deployments using Terraform and GitHub actions, simplifying the process for application teams. By building a multi-tenant environment and employing best practices in cloud management, we ensured the new platform could support Costco’s extensive application portfolio efficiently.

BUSINESS BENEFITS

- **Cost Efficiency**: Consolidating platforms reduced operational costs significantly.

- **Development Agility**: Faster deployment times enhanced the ability to innovate and bring features to market quickly.
- **Scalability**: The platform could handle increased loads during peak times without manual interventions.
- **Reliability**: Multi-region deployment and robust fault tolerance improved overall system reliability.
- **Operational Excellence**: Streamlined processes and automated tasks reduced the need for manual interventions.
- **Resource Management**: Better cloud consumption management led to reduced costs and improved resource allocation.

TECHNOLOGIES AND METHODOLOGIES USED

- **Google Cloud Platform (GCP)**: Chosen for its robust cloud services and scalability.
- **Terraform**: Used for infrastructure as code to automate and manage deployments.
- **Google Kubernetes Engine (GKE)**: Facilitated containerization and orchestration of applications.
- **Google Cloud Pub/Sub**: Replaced Azure Event Hubs for messaging services.
- **Spanner and Firestore**: Used for managing data storage, replacing Cosmos DB.
- **Google Cloud Service Mesh & Traffic Director:** Used to enhance security and resiliency while simplifying traffic management across the platform.
- **OpenTelemetry and Prometheus**: Deployed for monitoring and tracing to ensure optimal performance.
- **Redis Cloud:** Redis Cloud provides highly available, fully managed, in-memory key-value databases primarily used for caching.

PARTNERSHIPS

The successful implementation of Costco's platform on GCP involved strategic collaborations with Google Cloud and Redis. Google provided critical support, especially in resolving issues with the cloud service mesh and optimizing the use of GCP services. Redis was instrumental in managing and optimizing database performance and costs. These partnerships were vital in ensuring the platform's robustness and efficiency.

LESSONS LEARNED

1. **Flexibility**: Adapting quickly to changing requirements was crucial for meeting tight deadlines.
2. **Automation**: Reliance on automation ensured repeatability and reduced the potential for human error.
3. **Proactive Collaboration**: Engaging with partners like Google and Redis early helped resolve issues swiftly.
4. **Scalability Testing**: Regular performance testing ensured the platform could handle peak loads.
5. **Operational Efficiency**: Streamlining processes and reducing manual interventions improved overall efficiency.
6. **Self-Service**: Empowering teams to manage their own resources increased agility and reduced dependency on centralized support.

CONCLUSION

The Costco Modern GDX Platform on Google Cloud project exemplifies Improving's ability to tackle complex migration and modernization challenges. By leveraging GCP's capabilities and focusing on automation, scalability, and reliability, we delivered a robust platform that meets Costco's business needs. Our unique approach, combined with strategic partnerships, enabled us to create a scalable and cost-effective solution that supports rapid innovation and operational excellence.