Case Study

General Services Administration (GSA)

FAS Acquisition Logistics CONnect (FALCON)

The Challenge

With portions of GSA's legacy FSS-19 system consisting of costly Unisys mainframes from the 1970s, maintenance was too costly, and the operations and maintenance (O&M) technical debt insurmountable. Smartly, the **GSA published a directive that all legacy mainframe systems would be retired.**

The Solution

Octo was called to establish a modern, refined, and mature solution platform to support long-term, strategic GSA initiatives, including broad cloud adoption and migration. Octo collaborated with the GSA on several solution options and eventually **chose Amazon Web Services (AWS) serverless design principles and architecture that reduce infrastructure costs and adapt easily to meet future needs.**

Octo's two Agile teams and one project team have built cloud constructs as microservices, promoting flexibility in design and reuse of existing functions. Together, the teams developed a robust data exchange process that supports **streamlined data sharing** between the old mainframe and new AWS cloud environments. **Numerous systems now connect to FALCON through APIs, and FALCON shares data with other GSA systems.** Within GSA's ecosystem, FALCON serves as the source of truth for data being consumed by other systems.

The Benefits

Reusable cloud designs and constructs have **reduced GSA's time to market,** and leveraging of cloud-based tools and infrastructure such as Amazon Web Services Cloud Development Kit (AWS CDK) Infrastructure as Code has further **reduced delivery time.** Additionally, because FALCON has **no server management requirements,** there is no operating systems or hardware to install, maintain, or administer. The app team can **scale FALCON automatically** by adjusting capacity through toggling units of consumption rather than through units of individual servers.

Because of this, **FALCON will incur no charge when code is not running.** And with **built-in availability and fault tolerance, FALCON** does not require an app team to architect for these capabilities because the services running the application provide them by default. GSA now enjoys **100x savings** in existing production operational costs, a reduction from the average cost of ~$1M to ~$100K.

The Results

- GSA now has its **first full-scale serverless Virtual Private Cloud as a Service** (VPCaaS) environment using AWS FedRamped services, including AWS Cloud Development Toolkit, which allows for "one-click" deployments.

- Octo has **delivered five of nine fully modernized system components within 12 months,** with the remaining components projected to be complete by December 2022.

- Automation testing (regression) and API/web service testing through Postman and SoapUI using Groovy scripting **reduced time for manual testing by half.**

- The design and architecture of the VPCaaS environment, AWS services, and CDK Infrastructure as Code (IaC) pipeline provide capability to **resolve open system defects in real-time without system outages.** Previously technical debt/defects required downtime and would only be scheduled during quarterly system maintenance periods.

- To date, FALCON O&M has **resolved ~10 high and one critical defect and/or security vulnerabilities in under 12 hours** on average.

- Octo successfully completed a lightweight **Authority to Operate (ATO) review in five weeks,** as opposed to the typical eight to ten weeks usually required.

- GSA was **recognized by AWS** at the 2022 Public Sector Summit where GSA described implemented solutions and successes of adapting legacy mainframe systems to modern cloud-based serverless technologies.

To learn more, visit gsa.octo.us.