

nClouds | AWS Case Studies

Woflow

How nClouds helped Woflow migrate its Merchant Data Platform from Heroku to AWS and modernize its application to optimize scalability, operational efficiency, and costs.



Industry

Data Management, E-commerce, POS

Location

San Francisco, CA

Challenge

Migrate from Heroku to AWS and modernize its application to optimize scalability, operational efficiency, and costs.

Featured Services

Application Modernization, Managed DevOps Services, Migration Services, 24/7 Support Services, AWS Consolidated Billing, nOps

About Woflow

Woflow began its business of catalog digitization and data management in 2017. Their mission is to structure the world's unstructured data. To accomplish that mission, Woflow created the world's first Merchant Data Platform. The Woflow Engine is an ML-powered task automation system that empowers merchants to create, catalog, and manage complex structured data at scale. Woflow works with many industry innovators in food delivery, retail, e-commerce, etc. The Woflow Engine optimizes hundreds of thousands of merchant and customer interactions per month. To learn more, go to woflow.com

Benefits Summary



23% savings on AWS compute & 40% savings on overall AWS bill



Enhanced operational efficiency and faster time-to-market



Improved scalability and reliability

Challenge:

Migrate from Heroku to AWS and modernize its application to optimize scalability, operational efficiency, and costs.

Woflow's application frontend was already deployed in AWS, and they needed to migrate the backend portion of the application from Heroku to AWS to achieve improved scalability and operational efficiency. The company wanted to automate environment buildout using AWS CloudFormation, modernize their application by containerizing it with Amazon ECS, and implement an Amazon Virtual Private Cloud and a proper network structure.

Why AWS and nClouds

A senior software engineer at Woflow had previously worked with nClouds on two projects with different companies. He was so impressed with the experience that, when he began working at Woflow, he called on nClouds once again. Woflow loved what nClouds did so much that they engaged nClouds to provide Managed DevOps Services and 24/7 Support Services.

Fundamentally, Managed DevOps Services is the practice of supporting software development and IT operations in a reiterative delivery lifecycle to enable continuous optimization. nClouds assigned a dedicated DevOps team to improve and maintain Woflow's AWS infrastructure to support the company's agreed-upon roadmap for DevOps improvement projects. The team proactively identifies and mitigates related issues and supports and communicates regularly with Woflow's development team. nClouds maintains and anticipates the need for a range of processes and functions to improve operations while reducing expenses and developer stressors. nClouds' 24/7 Support Services maximizes Woflow's uptime and performance stability on AWS. With consolidated billing for AWS Organizations, nClouds enables Woflow to combine its usage across all AWS accounts to gain volume pricing discounts. This relationship has created a win-win scenario for Woflow and nClouds.



Woflow leveraged several Amazon Web Services:

- **Amazon API Gateway (API Gateway)** - Makes it easy for Woflow's developers to create, publish, maintain, monitor, and secure APIs at any scale.
- **Amazon CloudFront (CloudFront)** - A large-scale, global, and feature-rich CDN that provides Woflow with secure, scalable, and intelligently integrated application delivery.
- **Amazon CloudWatch (CloudWatch)** - Monitors applications, responds to system-wide performance changes, optimizes resource utilization, and provides a unified view of operational health.
- **Amazon ElastiCache for Redis** - An in-memory data structure service to enhance the ease-of-use and power of Redis, and improve availability, reliability, scalability, security, and performance.
- **Amazon Elastic Compute Cloud (Amazon EC2)** - A web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers. It provides complete control of computing resources and runs on Amazon's proven computing environment.
- **Amazon Elastic Container Registry (Amazon ECR)** - A fully-managed Docker container registry integrated with Amazon ECS that makes it easy for Woflow to store, manage, and deploy Docker container images.
- **Amazon Elastic Container Service (Amazon ECS)** - A highly scalable, high-performance container orchestration service that supports Docker containers and enables Woflow to run and scale containerized applications on AWS easily.
- **Amazon Elasticsearch Service** - A fully managed service that makes it easy for Woflow to deploy, secure, and operate Elasticsearch at scale with zero downtime.
- **Amazon RDS for PostgreSQL** - Makes it easy for Woflow to set up, operate, and scale PostgreSQL deployments in the cloud.
- **Amazon Simple Storage Service (Amazon S3)** - A flexible way to store and retrieve data, providing Woflow with cost optimization, access control, and compliance.

“There is a day and night difference between nClouds' AWS and DevOps expertise and that of our previous service provider. We were so impressed with nClouds' work to help us migrate Woflow from Heroku to Amazon ECS that we asked them to provide ongoing Managed DevOps Services to improve and maintain our application suite.”

Andrew Harasta
Senior Software Engineer, Woflow

- **Amazon Virtual Private Cloud (Amazon VPC)** - Enables Woflow to provision a logically isolated section on AWS where they can launch AWS resources in a virtual network that they define.
- **AWS Availability Zone** - Availability Zones (AZs) are distinct locations within an AWS Region that are engineered to be isolated from failures in other Availability Zones. AZs provide inexpensive, low-latency network connectivity to other Availability Zones in the same AWS Region. Each region is completely independent.
- **AWS Certificate Manager (ACM)** - Provisions, manages, and deploys public and private Secure Sockets Layer/Transport Layer Security (SSL/TLS) certificates to secure network communications and establish the identity of websites over the internet as well as resources on private networks.
- **AWS Fargate** - Enables Woflow to run containers without having to manage servers or clusters.
- **AWS Identity and Access Management (IAM)** - To control users' access to AWS services.
- **AWS Organizations** - Provides policy-based management for multiple AWS accounts.
- **AWS Systems Manager Parameter Store** - Provides Woflow with secure, hierarchical storage for configuration data management and secrets management.
- **Consolidated billing for AWS Organizations** - A feature in AWS Organizations that enables Woflow to consolidate billing and payment for multiple AWS accounts. nClouds provides the consolidated bill to Woflow.
- **Internet gateway** - A horizontally scaled, redundant, and highly available VPC component that allows communication between Woflow's VPC and the internet. It provides a target in Woflow's VPC route tables for internet-routable traffic and performs network address translation (NAT) for instances that have been assigned public IPv4 addresses.
- **Network address translation (NAT) gateway** - Enables instances in a private subnet to connect to the internet or other AWS services, but prevents the internet from initiating a connection with those instances.

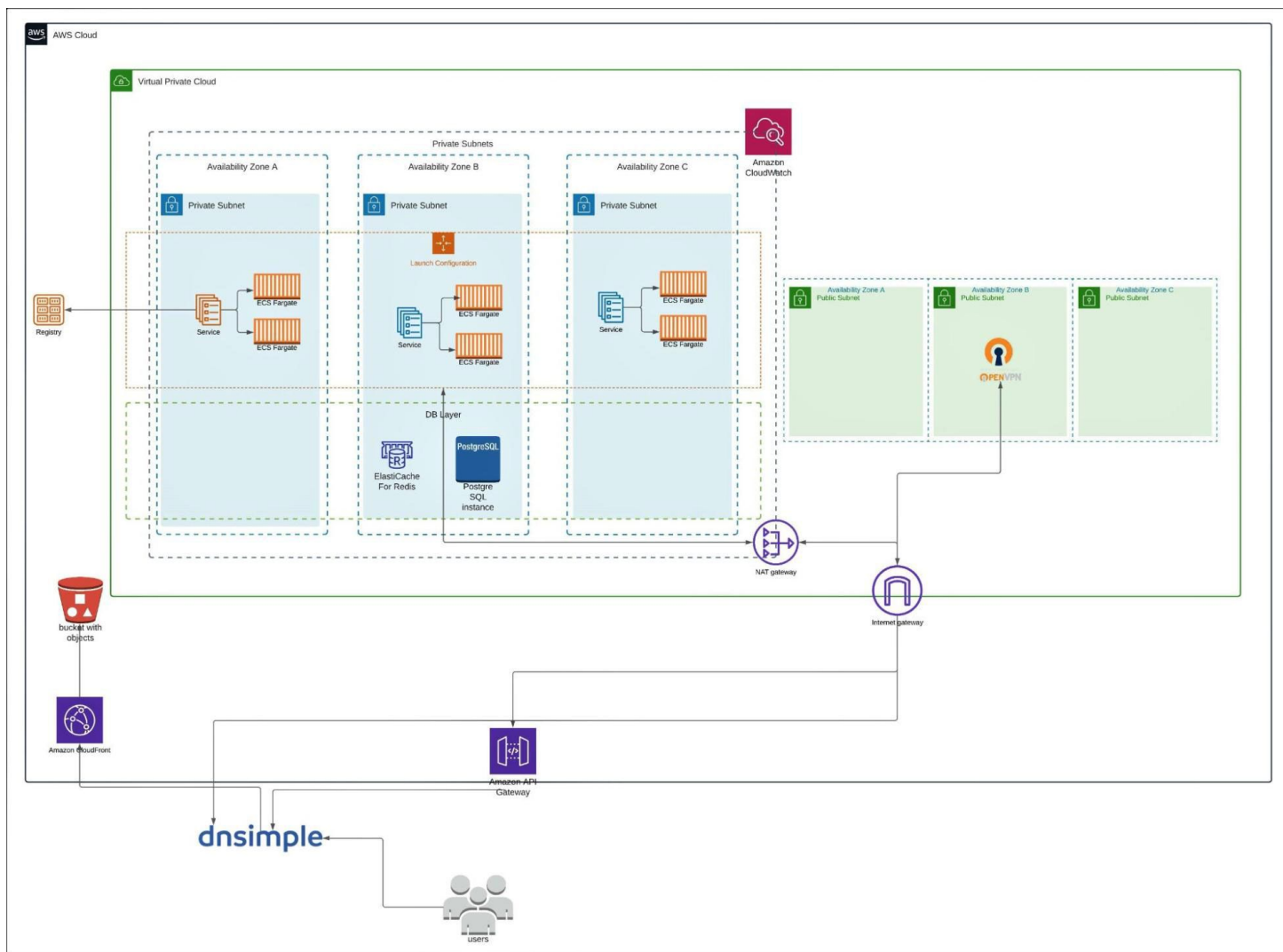
Woflow's solution stack also included additional, essential third-party tools:

- **CircleCI** - A continuous integration and delivery platform (CI/CD) that makes it easy for Woflow to rapidly build and release quality software at scale.
- **DNSimple** - A managed domain name server service operated by Aetrium LLC d/b/a DNSimple, which offers DNS hosting, domain registration, and SSL certificates.
- **New Relic** - A web and mobile application performance service designed to monitor applications in real time. It provides Woflow with alerts on application downtime before users encounter problems.
- **nOps** - A SaaS cloud management and intelligence platform that continuously optimizes cost, security, performance, reliability, and operational excellence, aligned with AWS Well-Architected Framework best practices.
- **OpenVPN Access Server** - A full-featured SSL VPN software solution to provide fine-grained access control of the infrastructure.
- **ShareSave Service by nClouds** - A cost optimization program offered by nClouds with a shared-savings pricing model. This SaaS platform collects Amazon CloudWatch and AWS CloudTrail logs. It automatically reacts in real time by purchasing RIs and/or SPs upon an increase in compute usage and selling them upon a decrease in compute usage. nClouds shares a percentage of the savings with Woflow, which increases if Woflow's volume expands or they purchase additional nClouds services.

nClouds' Solution Architecture for Woflow

nClouds migrated Woflow's application suite from Heroku to AWS to increase scalability and operational efficiency. Woflow's application stack included three single-page frontend applications, one backend monolith application, and one worker app deployed in Heroku. Redis was used as a cache, and data was stored in Postgres. nClouds deployed Woflow's application stack on AWS in several stages, including containerizing the backend monolith and worker application, developing AWS CloudFormation code to provision the basic network infrastructure, deploying the three single-page frontend apps in Amazon S3 and Amazon CloudFront, and deploying both backend services to the new Amazon ECS platform. The results are presented in the following schematic.

High-level architecture diagram:



The Benefits

Teaming with nClouds, Woflow now has a modernized application aligned with AWS Well-Architected Framework best practices. The project has yielded numerous benefits:



23% savings on AWS compute & 40% savings on overall AWS bill

Using nClouds' ShareSave Service, Woflow has achieved 23% net savings on its AWS compute costs with 100% flexibility and zero lock-in. ShareSave is an expert, AI-driven service that provides autopilot management of AWS commitments. Plus, as part of the Monthly Cost Optimization Reviews that nClouds provides with AWS consolidated billing, the nClouds team found and implemented two changes that resulted in 40% overall savings on their overall AWS bill. The nOps cloud management platform provides continuous insights on Woflow's AWS infrastructure health for cost optimization, security, reliability, performance efficiency, and operational excellence so that the company is alerted and can make any necessary remediations.



Enhanced operational efficiency and faster time-to-market

Operational efficiency is critical when measuring organizational performance. It's about delivering products or services to customers efficiently while ensuring the high quality of products, services, and support. By migrating Woflow's application suite to AWS, nClouds streamlined base operations and eliminated needless redundancies and waste. Operational efficiency accelerates the development cycle to reach markets faster and improves operational stability to increase availability. With a modernized application, Woflow can innovate faster, reduce risk, and accelerate time-to-market.



Improved scalability and reliability

Scalability is the ability to adapt to growth and increased demand. Reliability is the ability of a workload to perform its intended function correctly and consistently when it's expected to. Migrating to Amazon ECS provides Woflow with reduced operational overhead and improved scalability, reliability, and security. Scalability is also delivered by CloudFront, Amazon ElastiCache for Redis, Amazon Elasticsearch Service and Amazon RDS for PostgreSQL. Workload data and resources are distributed across three AZs to increase availability, reliability, and fault tolerance.

Want to learn more about migrating from Heroku to AWS? Check out our [on-demand webinar](#).

About nClouds

nClouds is a certified, award-winning provider of AWS and DevOps consulting and implementation services. We partner with our customers, as extensions of their teams, to build and manage modern infrastructure solutions that deliver innovation faster. We leap beyond the status quo.

Copyright © 2022 nClouds, Inc. All rights reserved

