



Modernizing Mortgage Operations: A DevOps Journey with AWS

CAPABILITIES SHOWN



Advisory
Services



Cloud
Migration



Digital
Transformation



Cloud
Engineering



Observability
& Monitoring

ABOUT THE COMPANY

We are an ISO 9001:2008, 9001:27001, 20000-1:2018, CMMI Level 3, EDWOSB providing superior, affordable and innovative business management and information technology services to federal and private sector clients nationwide. We specialize in Software Development, Business Intelligence (BI), Data Management, Data Governance, Cyber Security, Data Quality, Master Data Management, Advanced Data Analytics and Cloud Services.

ABOUT THE CUSTOMER – SECONDARY MORTGAGE COMPANY



Fannie Mae a prominent player in the mortgage industry, faced a critical juncture in its operations. The company, grappling with legacy systems and manual processes, realized the pressing need to modernize its infrastructure and streamline operations to stay competitive in an evolving market landscape. To tackle these challenges head-on, Fannie Mae embarked on a transformative journey leveraging AWS DevOps techniques.

CHALLENGES

- ✓ **Legacy Infrastructure:** Fannie Mae infrastructure was a patchwork of disparate systems and technologies, hindering collaboration, agility, and scalability.
- ✓ **Manual Processes:** Manual deployment, configuration, and release processes introduced bottlenecks, delays, and increased the risk of errors, impacting time to market and customer satisfaction.
- ✓ **Compliance and Security:** Compliance with regulatory standards such as GDPR, HIPAA, and SOX, as well as ensuring data security and privacy, posed significant challenges and risks.
- ✓ **Scalability:** With fluctuating demand for mortgage services, Fannie Mae struggled to scale its infrastructure efficiently to meet growing business needs while maintaining performance and reliability.

SOLUTION



Fannie Mae partnered with Navitas to architect and implemented a robust DevOps solution tailored to its specific requirements. The solution aimed to address the following key objectives:

- ✓ **Automated Infrastructure Deployment:** Leveraging AWS CloudFormation, infrastructure was codified as code (IaC), enabling automated provisioning and management of AWS resources.
- ✓ **Continuous Integration and Delivery (CI/CD):** Urban Code (UCD) was utilized to automate the CI/CD pipeline, enabling seamless integration, testing, and deployment of application code across environments.
- ✓ **Automated Deployment:** Urban Code (UCD) facilitated automated deployment of application updates to staging and production environments, reducing manual intervention and deployment errors.
- ✓ **Security and Compliance:** AWS IAM was configured to enforce least privilege access, ensuring secure access to AWS resources, and compliance with regulatory standards.
- ✓ **Monitoring and Logging:** Amazon CloudWatch provided real-time monitoring and logging capabilities, enabling proactive monitoring of system performance, application behavior, and security events.
- ✓ **Managed Database Services:** Amazon RDS was utilized to host the mortgage database, providing a managed

database solution with built-in scalability, reliability, and security features.

SERVICES USED




- ✔ AWS S3 (Simple Storage Service): Used for storing objects and data, including static resources and backups.
- ✔ Amazon RDS (Relational Database Service): Used for hosting databases, specifically Aurora and Postgres.
- ✔ Amazon ECS (Elastic Container Service): Used for deploying and managing containerized applications.
- ✔ AWS Fargate: Used for serverless container orchestration.
- ✔ AWS Lambda: Used for serverless functions and integration into the application.
- ✔ Amazon AppStream: Used for delivering applications to users via streaming.
- ✔ AWS Secrets Manager: Used for managing application credentials and secrets.
- ✔ Amazon API Gateway: Used for managing APIs and routing requests to the appropriate services.
- ✔ AWS X-Ray: Used for monitoring and analyzing container workloads.
- ✔ AWS Inspector and GuardDuty: Used for security monitoring and threat detection.
- ✔ Amazon Route53: Used for DNS routing and traffic management.
- ✔ Amazon Redshift: Used for data warehousing and analytics.
- ✔ AWS Direct Connect: Used for connecting on-premises data centers to AWS.
- ✔ AWS Transit Gateway: Used for networking and connectivity.
- ✔ AWS KMS (Key Management Service): Used for managing encryption keys.
- ✔ AWS CloudFront: Used as a content delivery network (CDN) for internet-facing services.

THE BENEFITS



- ✔ **Streamlined Operations:** Automation of deployment and release processes led to shorter release cycles, increased deployment frequency, and improved operational efficiency.
- ✔ **Enhanced Security and Compliance:** Implementation of security best practices and compliance controls ensured data protection, privacy, and regulatory compliance, mitigating the risk of security breaches and non-compliance penalties.
- ✔ **Improved Scalability:** Leveraging AWS's scalable infrastructure, Fannie Mae could seamlessly scale its resources up or down based on demand, ensuring optimal performance and customer satisfaction during peak periods.
- ✔ **Cost Optimization:** By adopting AWS DevOps techniques, Fannie Mae reduced infrastructure costs, minimized manual labor, and optimized resource utilization, resulting in significant cost savings and improved return on investment (ROI).
- ✔ **Faster Time to Market:** By automating deployment processes and streamlining workflows, Fannie Mae experienced accelerated time to market for new mortgage products and services. Rapid iteration and



release cycles enabled the company to respond promptly to market demands and stay ahead of competitors.

- ✔ **Improved Collaboration:** The adoption of DevOps practices fostered greater collaboration and alignment between development, operations, and business teams at Fannie Mae. Shared visibility into the CI/CD pipeline and centralized management of infrastructure promoted cross-functional collaboration and communication, leading to more effective decision-making and faster issue resolution.
- ✔ **Reduced Downtime and Service Disruptions:** Automated testing, deployment, and rollback capabilities provided by AWS DevOps services helped Fannie Mae minimize downtime and service disruptions. Continuous monitoring and proactive alerting enabled early detection of issues, allowing for prompt remediation and mitigating the impact on customers and business operations.
- ✔ **Enhanced Disaster Recovery and Business Continuity:** Leveraging AWS's resilient infrastructure and disaster recovery capabilities, Fannie Mae bolstered its resilience to outages and disasters. Automated backup and recovery processes, coupled with multi-region redundancy, ensured business continuity and minimized the risk of data loss or service interruption.
- ✔ **Innovation Enablement:** The agility and flexibility afforded by AWS DevOps solutions empowered Fannie Mae to innovate and experiment with new technologies and approaches. The company could rapidly prototype, test, and deploy innovative mortgage solutions, driving differentiation and value for customers while staying ahead of industry trends and disruptions.
- ✔ **Customer Satisfaction and Loyalty:** Ultimately, the culmination of these benefits resulted in improved customer satisfaction and loyalty for Fannie Mae. Faster, more reliable mortgage services, coupled with enhanced security and compliance, instilled trust and confidence in customers, fostering long-term relationships and driving business growth.

By capitalizing on the full spectrum of benefits offered by AWS DevOps techniques, Fannie Mae positioned itself as a market leader in the mortgage industry, poised for sustained success and continued innovation in the years to come.

In summary, through its collaboration with AWS and adoption of DevOps principles and practices, Fannie Mae successfully modernized its mortgage operations, achieving greater agility, efficiency, security, and scalability, and positioning itself for continued growth and success in the dynamic mortgage industry landscape.