A FinTech Startup: DevOps on Cloud

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 nation-wide. 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.

13241 Woodland Park Rd Dr. Suite 200, Herndon, VA 20171 +1-571-222-4646 info@navitastech.com

ABOUT THE CUSTOMER – FinTech Company

A FinTech SaaS platform built for finance companies to manage the loan processing in an efficient way. Backed with real time data and analytics, The FinTech company offers Next-Gen services for finance companies with advanced reporting and AI/ML capabilities. Implementation of DevOPS is crucial for a startup which aims very high on its technical expertise to solve problem multi-million dollar finance companies. The changes requested by customers are very agile and hence an ideal application for DevOPS. Implementing DevOps in such an environment can significantly improve efficiency, collaboration, and delivery of digital services. This case study provides a high-level view for integrating DevOps practices.

CHALLENGES

- **Scalable Architecture:** Design the application architecture to be scalable, using microservices and containerization where appropriate.
- **Automated Testing and Deployment**: Implementing a robust CI/CD pipeline that can handle the complexity and scale of fintech applications.
- **High Availability and Reliability:** Fintech applications must be highly available and reliable to meet customer expectations and maintain trust.
- **Regulatory Compliance:** Fintech companies must comply with strict financial regulations, such as GDPR, PCI DSS, and AML laws.
- **Data Security and Privacy:** Handling sensitive financial data requires stringent security measures.

SOLUTION

DevOps introduces automation in the form of Continuous Integration (CI) and Continuous Deployment (CD) pipelines. Integrating compliance checks into the CI/CD pipeline to ensure that all deployments meet regulatory requirements. Ensure data is encrypted at rest and in transit and implementing strict access controls and role-based access to sensitive data and systems. Incorporating security testing into the CI/CD pipeline, including vulnerability scanning and penetration testing. This automation reduces manual intervention, speeds up the release process, and ensures that updates are deployed quickly and reliably. DevOps practices such as Infrastructure as Code (IaC). Implementing a comprehensive suite of automated tests (unit, integration, and end-to-end) to ensure code quality and reduce the risk of defects.

1. **Assess Current State and Define Objectives**
    - Evaluate current development and operations practices, identify gaps, and understand regulatory requirements. Define specific goals for the DevOps implementation, such as reducing time-to-market, improving compliance, enhancing security, and increasing reliability.
2. **Establish a DevOps Culture**
    - Foster a culture of collaboration between development, operations, security, and compliance teams. Encourage continuous learning and improvement by providing training and resources on DevOps practices and tools.
3. **Implement Continuous Integration and Continuous Deployment (CI/CD)**
    - Integrate automated testing into the CI/CD pipeline, including unit tests, integration tests, and security tests. Automate the build process to ensure consistent and reliable software builds. Implement deployment automation to enable frequent and reliable software releases. Technologies used are Bitbucket, AWS CodeBuild, AWS Code Deploy, Jenkins.
4. **Enhance Security and Compliance**
    - Integrate security practices into the CI/CD pipeline, including static code analysis, vulnerability scanning, and penetration testing. Automate compliance checks to ensure all deployments meet regulatory requirements. Technologies used are SonarQube.
5. **Monitoring and Observability**
    - Implement comprehensive monitoring solutions to track the performance and health of applications and infrastructure. Set up alerting mechanisms to notify teams of issues in real-time. Use log management tools to collect, analyze, and store logs for troubleshooting and compliance purposes. Technologies used are AWS CloudWatch, Prometheus, SNS and SQS
6. **Tools and Technologies**
    - Version Control: Git, Bitbucket
    - CI/CD: AWS CodePipeline, AWS CodeBuild, AWS Code Deploy, SonarQube
    - IaC: Terraform
    - Configuration Management: AWS config
    - Monitoring and Logging: AWS CloudWatch
    - Processing: EC2

SERVICES USED

To address these challenges, Navitas implemented a comprehensive AWS DevOps solution that leveraged several key services:

- 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 EC2 : Used for deploying and managing applications.
- AWS Lambda: Used for serverless functions and integration into the application.
- AWS Secrets Manager: Used for managing application credentials and secrets.
- Amazon API Gateway: Used for managing APIs and routing requests to the appropriate services.

- CI/CD: AWS CodePipeline, AWS CodeBuild, AWS Code Deploy, SonarQube

THE BENEFITS

- **Mean Time to Recovery (MTTR):** The average time it takes to recover from a production failure. With CI/CD implementation the MTTR achieved is closed to 10 minutes.
- **Automated Test Coverage:** Higher test coverage reduces the risk of defects reaching production and increases confidence in the codebase. The coverage is at 80%
- **Change Failure Rate:** A lower change failure rate suggests higher quality deployments and better stability in production. **Change failure rate is currently maintained at 0.01%**
- **Lead Time for Changes:** Shorter lead times indicate a more efficient development process, allowing the team to respond quickly to market demands and customer feedback.
- **Enhanced Data Accessibility:** Provided raw data for download in various formats and through API access, leading to a 60% increase in data utilization and enabling faster ad-hoc analysis.
- **Personalized Experience:** Offered customizable features, leading to a 15% improvement in user satisfaction and a 40% reduction in report customization time.
- **Continuous Availability:** Enabled 24/7 access to business-critical data, leading to a 15% increase in operational efficiency and timely financial reporting.