Agile Bank

Event-driven Architecture for Banking System in DevOps

Owner of project

Binit Bhushan

CONTENT

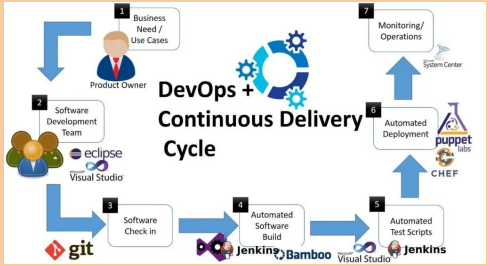
AGILE BANK

Introduction

Introducing Agile Bank !

Welcome to the forefront of banking innovation. Agile Bank isn't just your average financial institution – we're here to redefine the way you experience banking. With a focus on agility, efficiency, and customer satisfaction, Agile Bank incorporates DevOps principles to drive continuous improvement and innovation. Our commitment to DevOps allows us to adapt quickly to market changes, streamline processes, and deliver exceptional banking services tailored to your needs. Join us as we embark on a journey to revolutionize the banking industry and empower our customers to achieve their financial goals with ease and confidence.

How Bank Works



How AgileBank Works:

- Agile Development: Iterative approach for rapid product iteration and collaboration.
- Continuous Integration (CI): Automated code integration for early issue detection.
- Continuous Deployment (CD): Swift and consistent updates to production environments.
- Real-time Monitoring: Proactive tracking of system performance for seamless service.
- Customer Feedback Loop: Continuous gathering and utilization of customer insights for improvement

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PROBLEM STATEMENT

In today's banking landscape, traditional institutions face numerous challenges in meeting the evolving needs and expectations of customers in a rapidly digitizing world. These challenges include:

1. Legacy Systems: Outdated infrastructure and legacy systems hinder agility and innovation.
2. Customer Expectations: Increasing demand for seamless digital experiences puts pressure on traditional banks to modernize.
3. Security Concerns: Rising cyber threats require robust security measures to safeguard sensitive financial data.
4. Competition: Fierce competition from fintech startups and digital banks necessitates differentiation and innovation.

OBJECTIVE

To address these challenges, AgileBank sets the following objectives:

- Modernization: Upgrade infrastructure and systems to enhance agility and innovation.
- Customer-Centricity: Prioritize customer experience by delivering seamless digital banking services.
- Security Enhancement: Implement robust security measures to protect customer data and prevent cyber threats.
- Innovation: Foster a culture of innovation to differentiate AgileBank in the competitive banking landscape.

Technical Implementation

→ Agile Development Methodology:

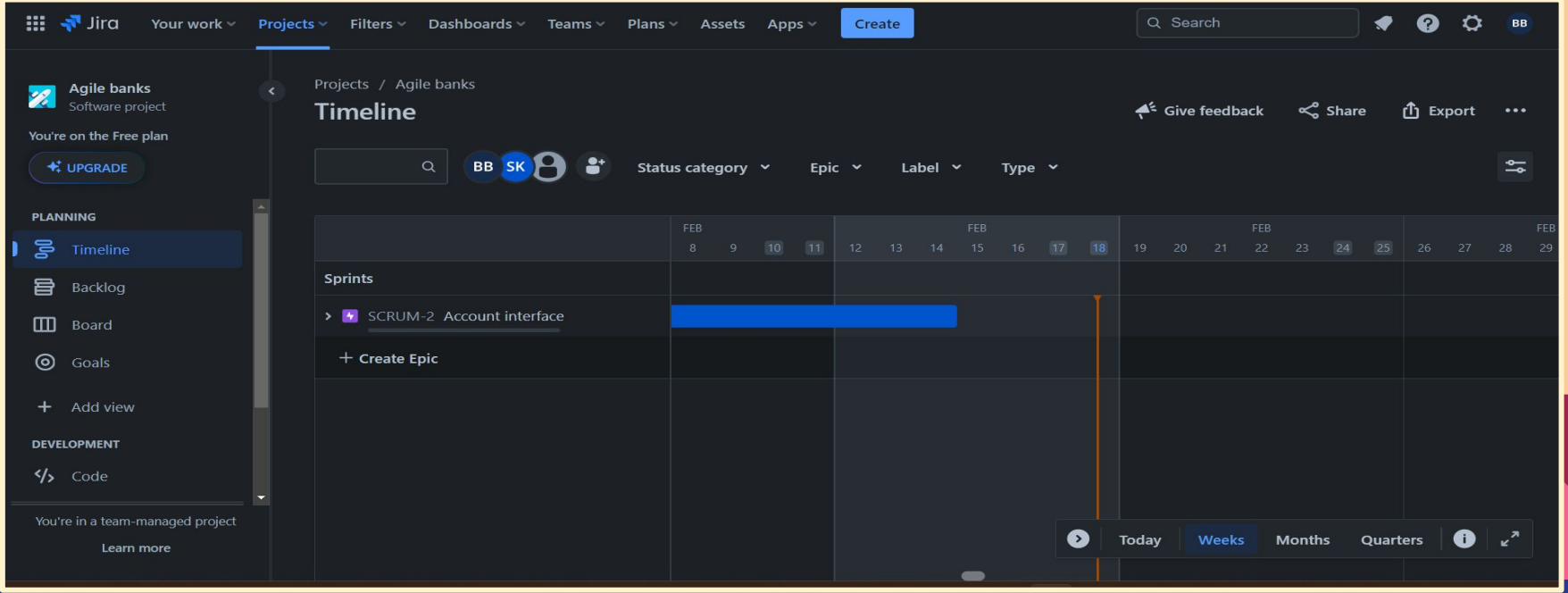
Agile Bank adopts an Agile development methodology, such as Scrum or Kanban, to iteratively develop and deliver features in short cycles. This approach allows for flexibility, adaptability, and collaboration among cross-functional teams, ensuring alignment with customer needs and business objectives. To facilitate Agile project management and team collaboration, AgileBank utilizes Jira, a powerful tool that enables efficient backlog management, sprint planning, issue tracking, and real-time communication. With Jira, AgileBank empowers teams to stay organized, prioritize tasks effectively, and deliver high-quality software solutions that meet customer expectations.

Technical Implementation

AGILE BANK

Jeera Tool :-)

Jira Software

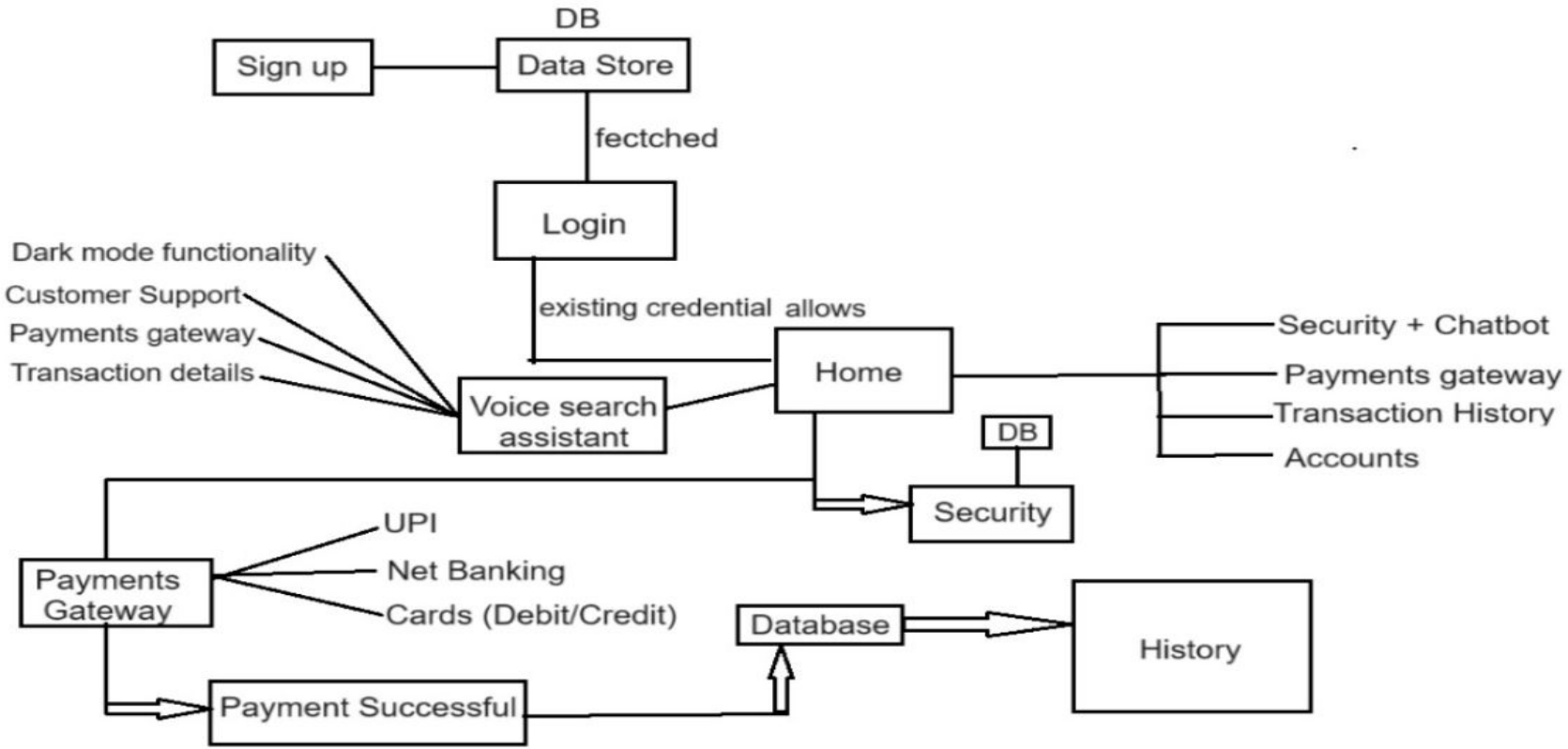


Outcome:

Project Plan

Task Description	Start Date	End Date	Status	Issues Arised Date issue details	Issues Resolved Date
Web Design Planning	01-15-2024	01-20-2024	Completed		
Web Development Setup	01/2 1/2024	01-25-2024	Completed		
Version Control IG system setuP	01-26-2024	01-30-2024	Completed		
H7ML/CSS Development	01-02-2024	02/15/2024 Basic Setup, Continuous Modifications throughout project as per requirements.	Completed	02-04-202^	26-04-202•
Jat'aScript Development	02/T6/2024	02/20/2024 8asic Setup, Continuous Modifications throughout project as oer requirements.	Completed		
Database F inalization	02/2 1/2024	02-25-2024	Completed		
Jenkins Pipeline Configuration	02-26-2024	03-05 2024	Completed		
Docker Environment Setup	06-03-2024	03-15-2024	Completed		
Docker Image Building	03-16-2024	03-25-2024	Completed		
Integration & Testing	03-26-2024	03-30-2024	Completed		
deployment & Finalization	04-01-2024	04-05-2024	Completed		

Working - Structure Of “THE AGILE BANK”



Technical Implementation

Web Application Development:

AgileBank develops a comprehensive web application to encompass all functions of a modern bank, including:

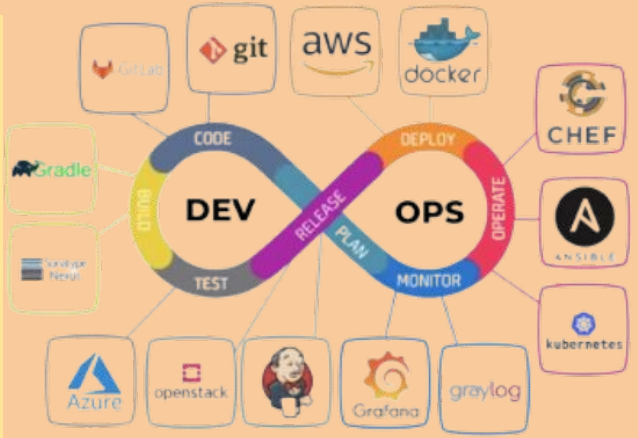
- Account Management: Allow customers to create and manage accounts, view balances, and perform transactions securely.
- Transaction Processing: Enable seamless processing of transactions, including transfers, payments, and bill payments, with real-time updates.
- Security Features: Implement multi-factor authentication, encryption, and access controls to ensure the security and integrity of customer data.
- Customer Support: Provide channels for customer support, including live chat, FAQs, and ticketing systems, to address inquiries and resolve issues promptly.
- Integration: Integrate with third-party services, such as payment gateways, credit bureaus, and regulatory compliance systems, to enhance functionality and compliance.

Technical Implementation

DevOps Tools:

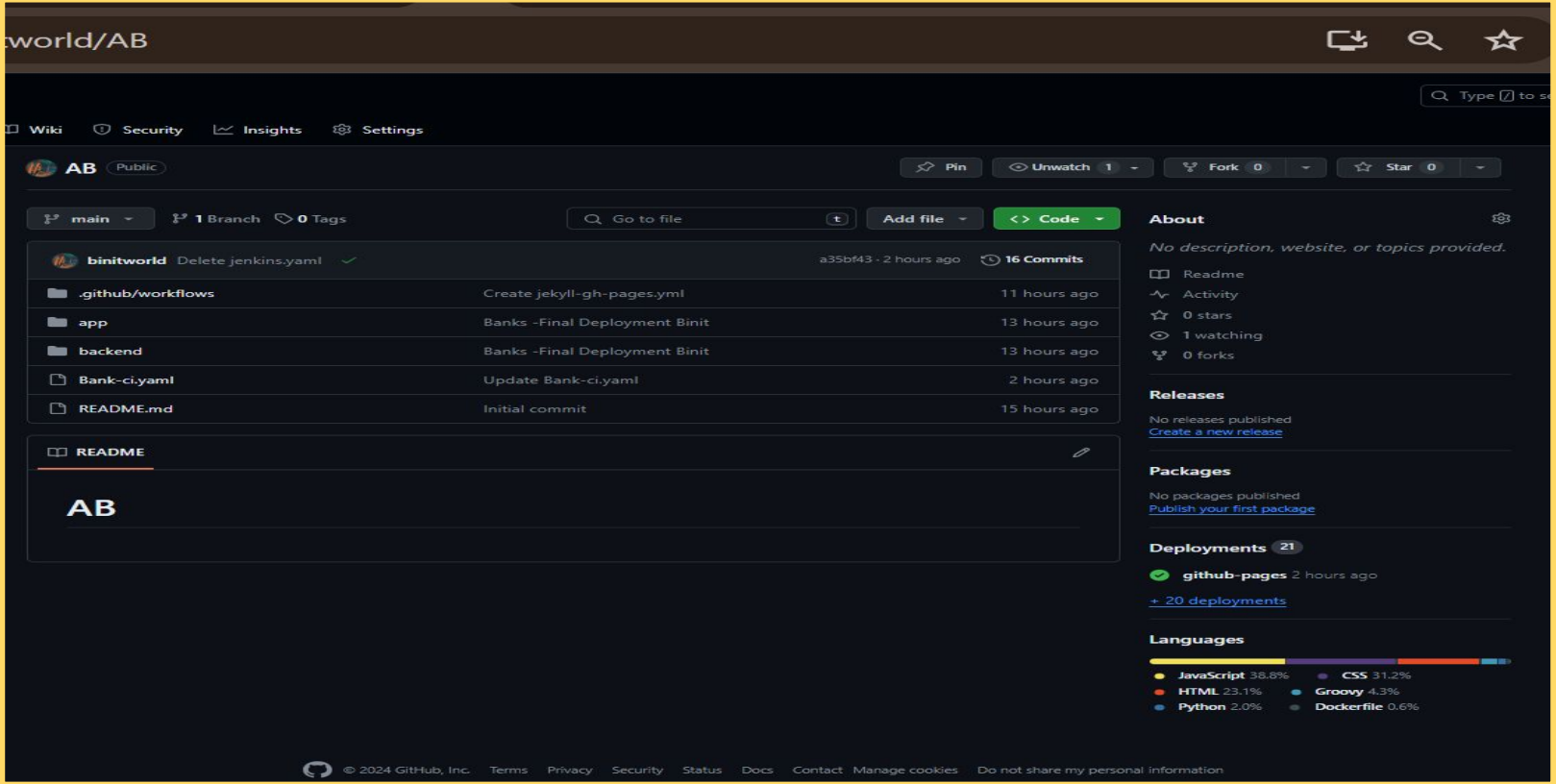
AgileBank utilizes a robust suite of DevOps tools to enhance development, testing, deployment, and operations processes, including:

1. Version Control: Git
2. CI/CD: Jenkins
3. IaC: Terraform
4. Containerization: Docker
5. Orchestration: Kubernetes
6. Monitoring and Logging: Jeera and Grafana
7. DataBase : DynamoDB(AWS)

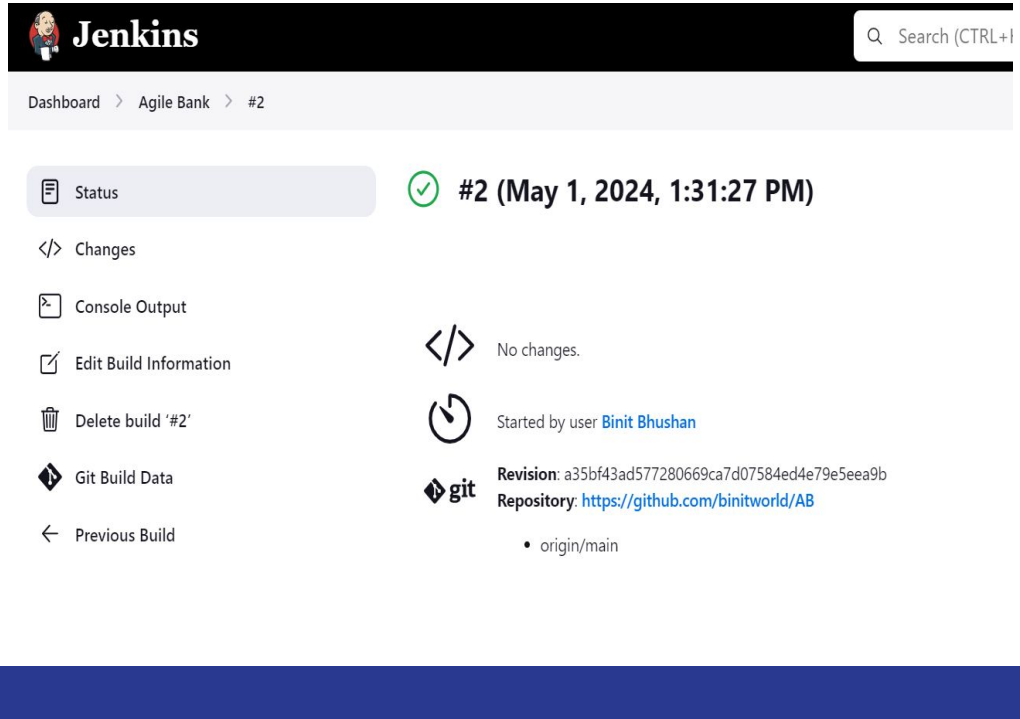


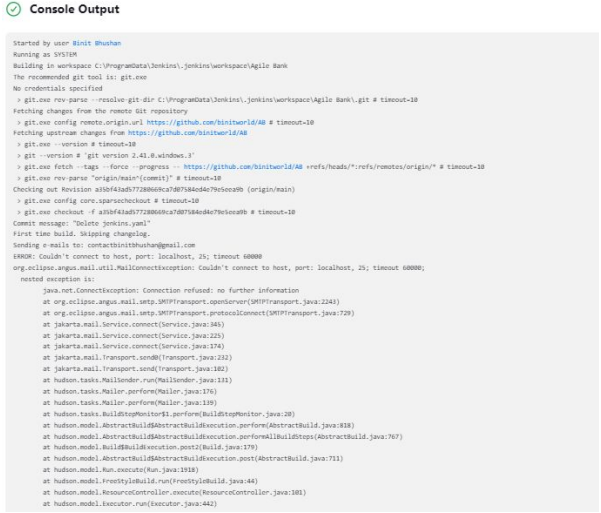
AGILE BANK

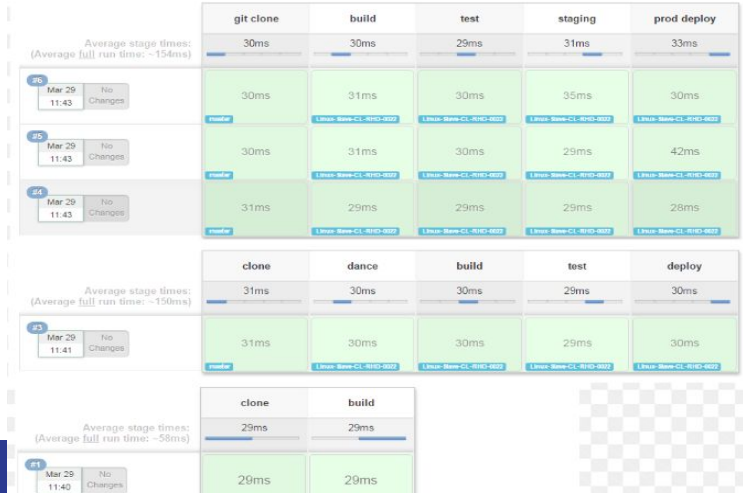
FINAL WORKS



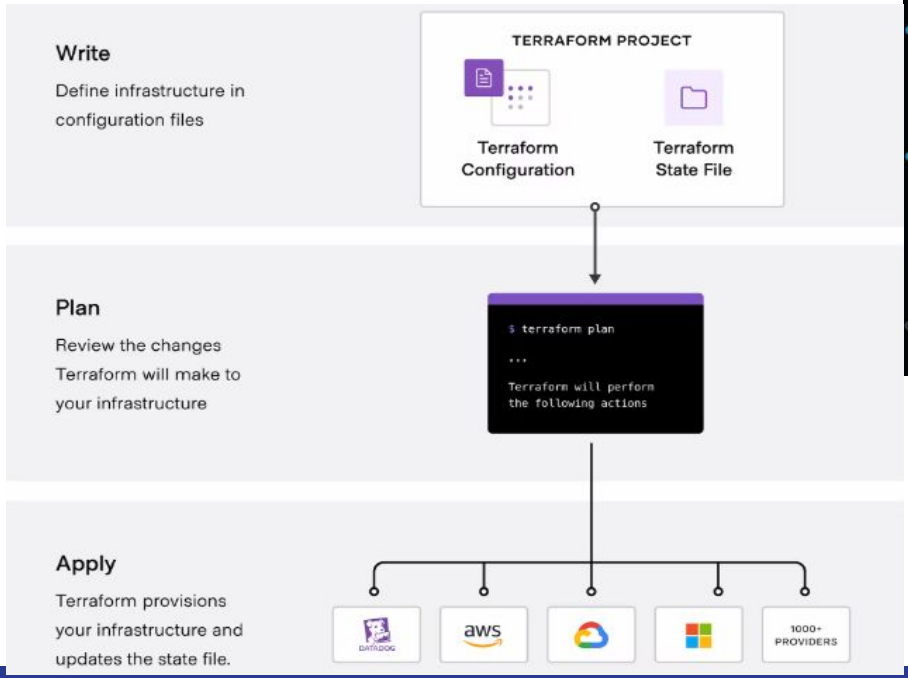
Jenkins PIPE LINES





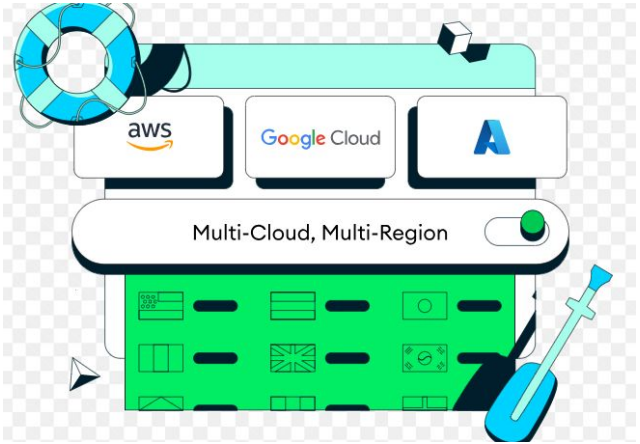


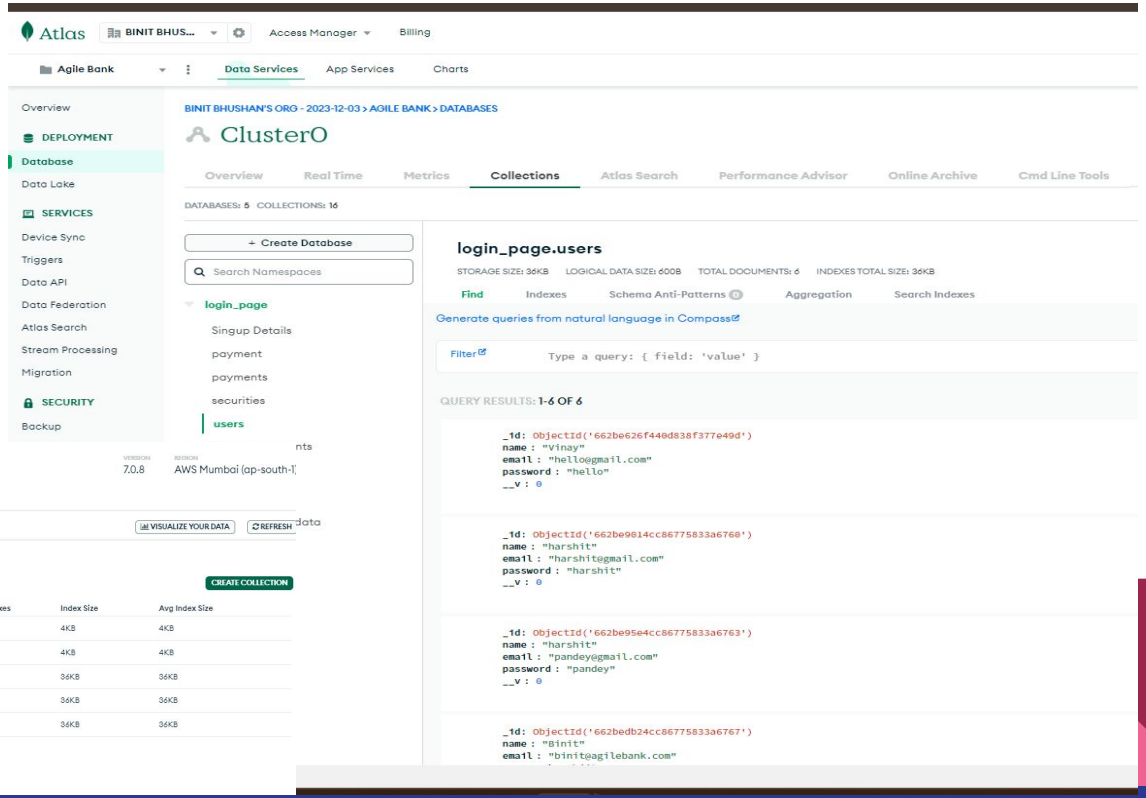
Terraform Works




```
PS E:\BSA\Banking System\src\app> terraform init

Initializing the backend...

Initializing provider plugins...

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
PS E:\BSA\Banking System\src\app> terraform plan

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so
no changes are needed.
PS E:\BSA\Banking System\src\app> terraform apply

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so
no changes are needed.

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
PS E:\BSA\Banking System\src\app>
```

Mongo DB…


aws
Google Cloud
Multi-Cloud, Multi-Region


Atlas
BINIT BHUS...
Access Manager
Billing
Agile Bank
Data Services
App Services
Charts
Overview
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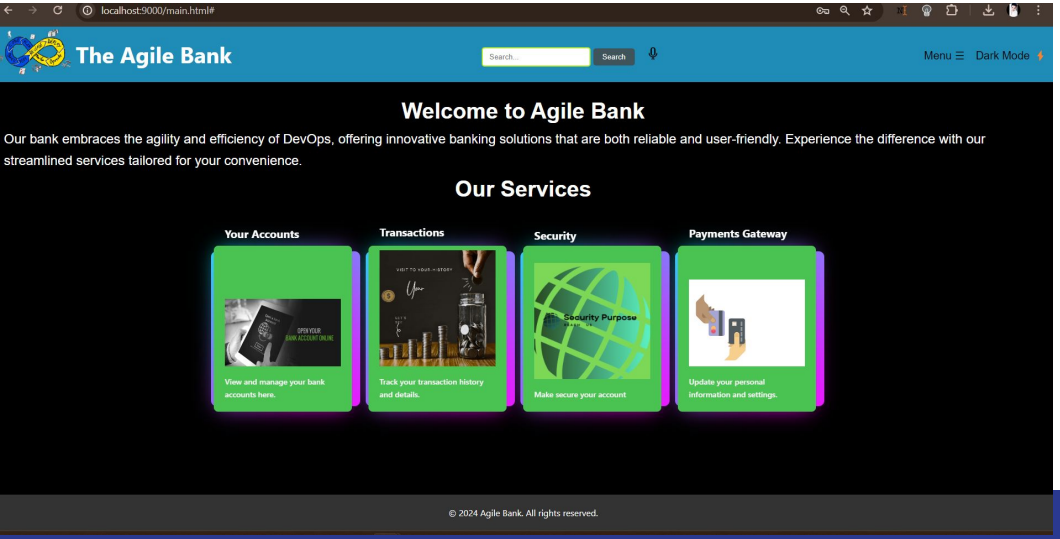
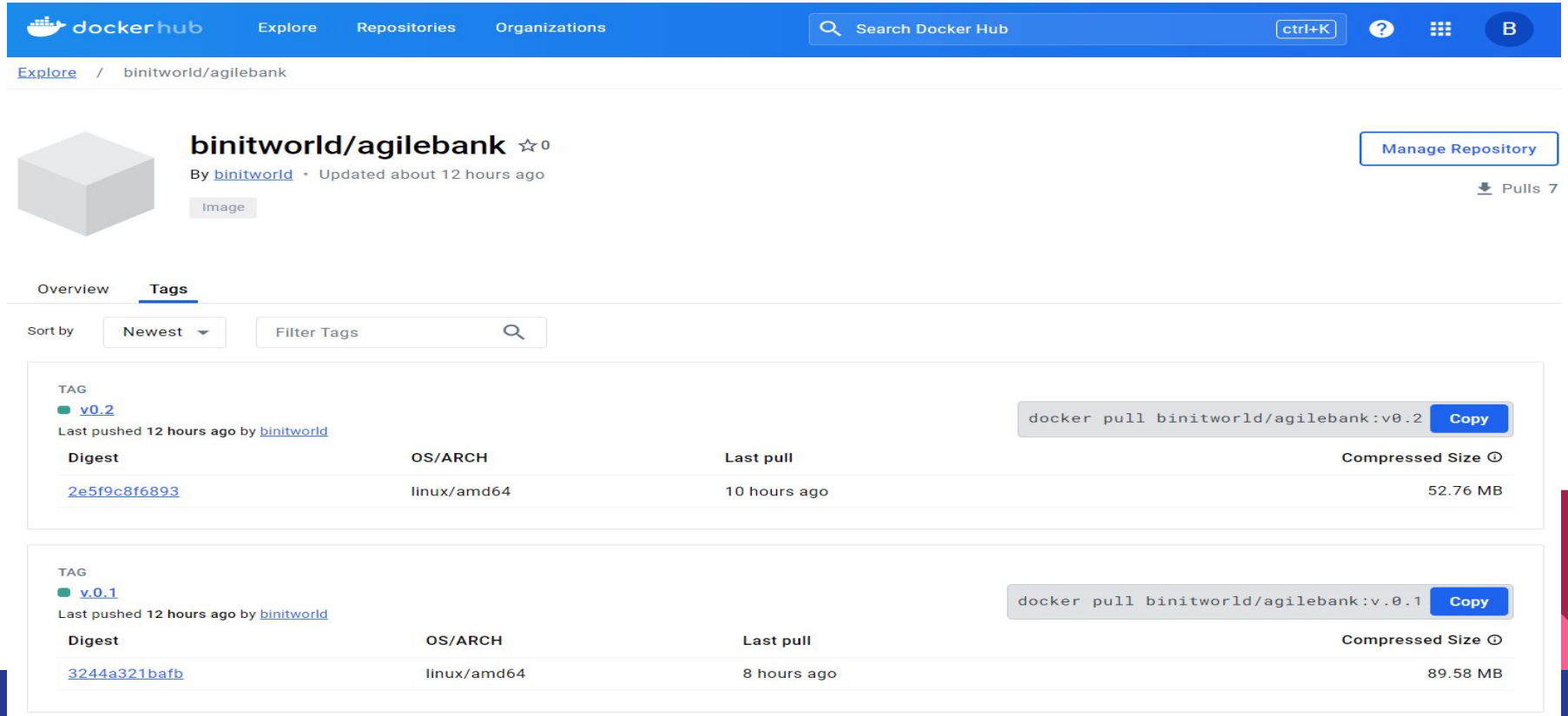
Database
Data Lake
SERVICES
Device Sync
Triggers
Data API
Data Federation
Atlas Search
Stream Processing
Migration
SECURITY
Backup
BINIT BHUSHAN'S ORG - 2023-12-03 > AGILE BANK > DATABASES
ClusterO
Overview
Real Time
Metrics
Collections
Atlas Search
Performance Advisor
Online Archive
Cmd Line Tools
DATABASES: 5 COLLECTIONS: 16
+ Create Database
Search Namespaces
login_page
Singup Details
payment
payments
securities
users
7.0.8
AWS Mumbai (ap-south-1)
login_page.users
STORAGE SIZE: 36KB LOGICAL DATA SIZE: 600B TOTAL DOCUMENTS: 6 INDEXES TOTAL SIZE: 36KB
Find
Indexes
Schema Anti-Patterns
Aggregation
Search Indexes
Generate queries from natural language in Compass
Filter
Type a query: { field: 'value' }
QUERY RESULTS: 1-6 OF 6
_id: ObjectId('662be626f440d838f377e49d')
name : "Vinay"
email : "hello@gmail.com"
password : "hello"
__v : 0
_id: ObjectId('662be9814cc86775833a6760')
name : "harshit"
email : "harshit@gmail.com"
password : "harshit"
__v : 0
_id: ObjectId('662be95e4cc86775833a6763')
name : "harshit"
email : "pandey@gmail.com"
password : "pandey"
__v : 0
_id: ObjectId('662bedb24cc86775833a6767')
name : "Binit"
email : "binit@agilebank.com"
Collections
Atlas Search
Performance Advisor
Online Archive
Cmd Line Tools
VISUALIZE YOUR DATA
REFRESH
CREATE COLLECTION
Documents
Logical Data Size
Avg Document Size
Storage Size
Indexes
Index Size
Avg Index Size

Dockerise / Deployments

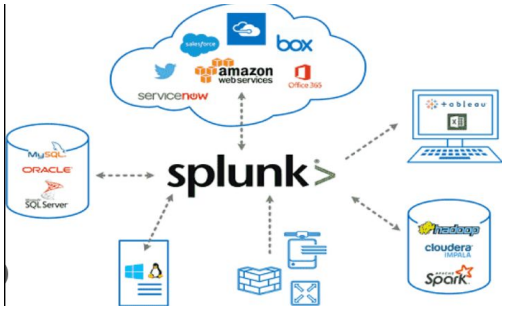
```
E:\BSA\Banking System\src\app>docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS
1e5fd73a987b   frontend   "/docker-entrypoint.…"   17 hours ago   Up 17 hours   0.0.0.0:9000->80/tcp
9aef546028a0   backend    "docker-entrypoint.s…"   17 hours ago   Up 17 hours   0.0.0.0:5000->5000/tcp
g
```

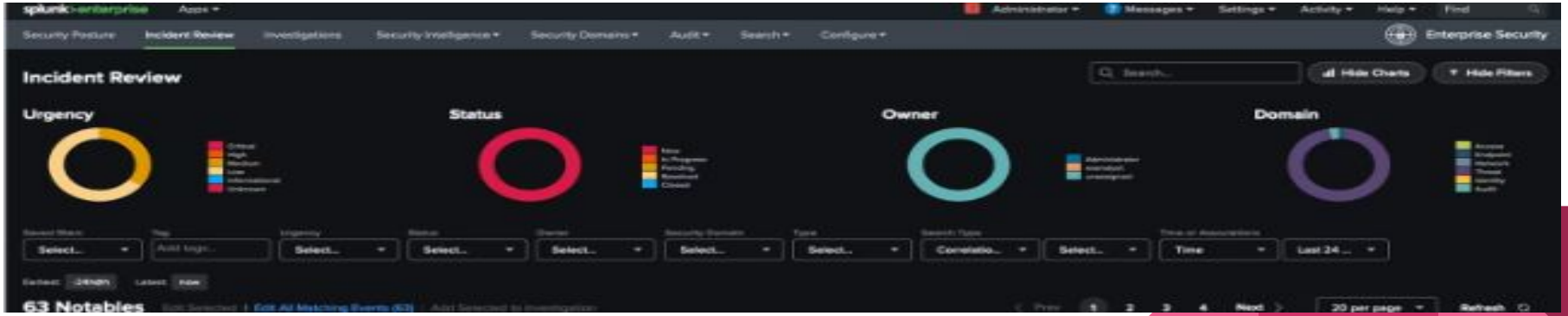


Docker Hub / on for orchestration with docker-swarm



Continuous Monitoring ..

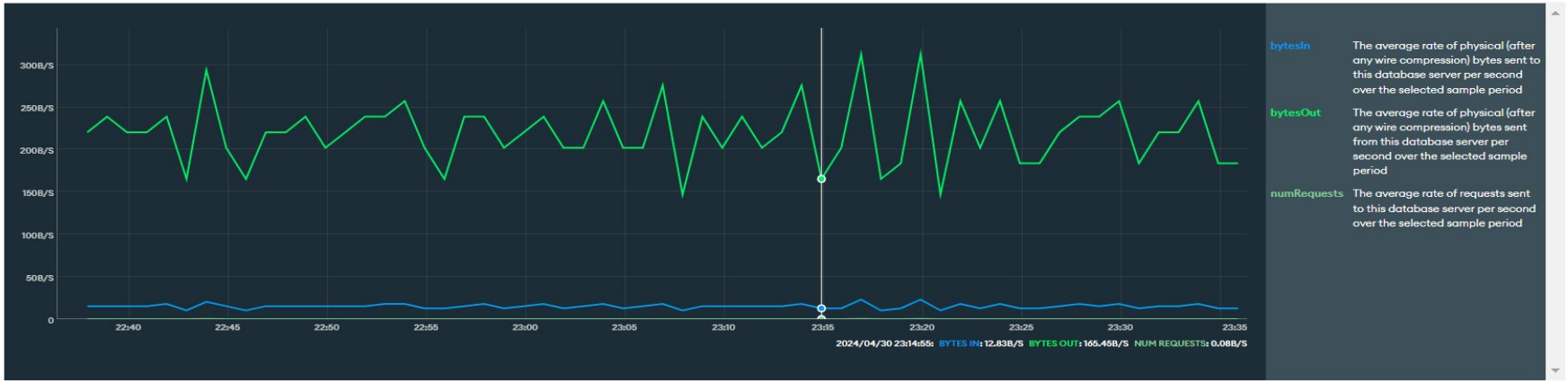




Continuous monitoring..

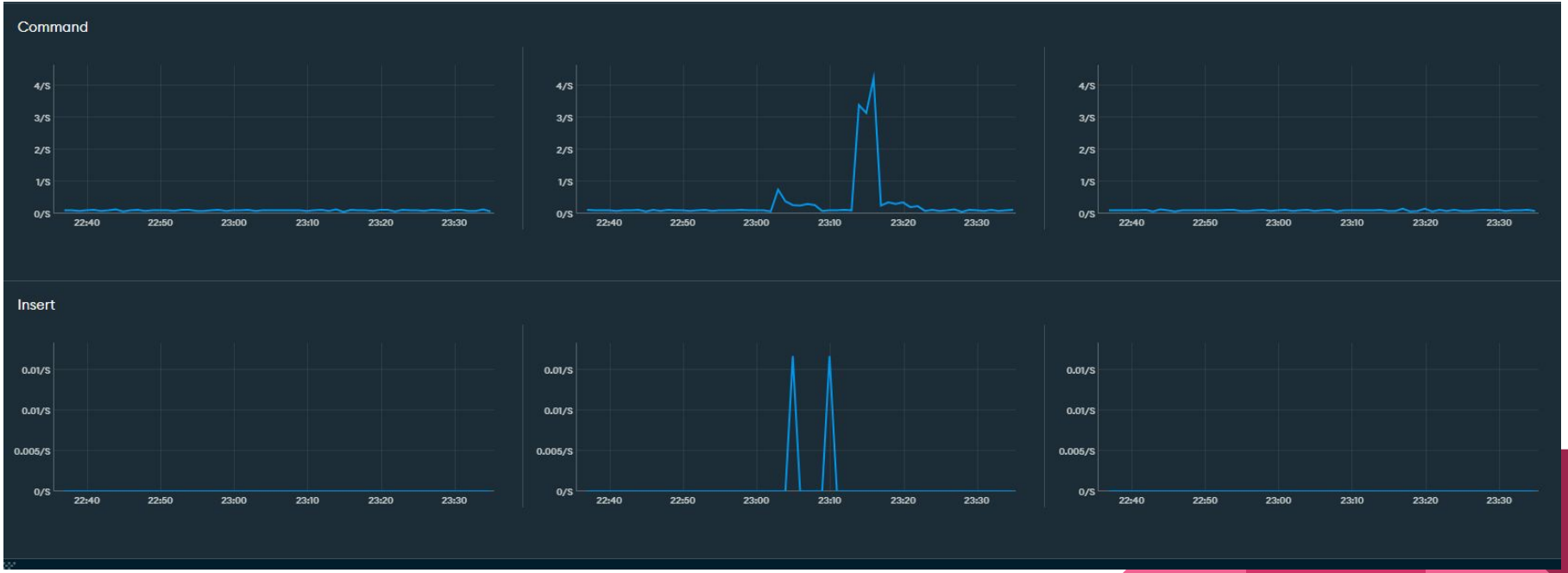
Some Insights of Monitoring……

Network



Continuous Monitoring…

Continuous Monitoring:.....



AREAS OF APPLICATION

1. Retail Banking: Everyday banking activities like account management, payments, transfers, and bill payments for individual customers.
2. Corporate Banking: Financial services for businesses, including corporate accounts, loans, trade finance, and cash management.
3. Investment Banking: Securities trading, asset management, mergers and acquisitions, and corporate advisory services.
4. Wealth Management: Personalized financial planning, investment advisory, and portfolio management for high-net-worth individuals.
5. Digital Banking: Seamless web and mobile banking experiences for convenient access to banking services.
6. Regulatory Compliance: Ensuring compliance with KYC, AML, and GDPR regulations.

SWOT ANALYSIS

Strengths:

- Robust DevOps practices
- Comprehensive web application
- Customer-centric approach
- Agile development methodology
- Modern technologies integration

Weaknesses:

- Dependence on third-party tools
- Initial investment and resources
- Resistance to change
- Staff training needs
- Cybersecurity risks

Opportunities:

- Market expansion
- Collaboration with fintech startups
- Introduction of new products/services
- Data analytics and AI utilization
- Regulatory partnerships

Threats:

- Competition
- Regulatory changes
- Technological obsolescence
- Economic downturns
- Reputation damage

CONCLUSION

AgileBank's implementation of DevOps principles and the development of its web application signify a pivotal move towards modernizing banking operations. With a focus on efficiency, scalability, and customer satisfaction, AgileBank is poised to excel in the dynamic banking landscape. By embracing agile methodologies and integrating modern technologies, AgileBank is well-positioned to meet evolving customer needs and maintain its competitive edge in the digital era.

REFERENCES

References:

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