GCPS Bus Monitoring Milestone 3

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Current Status

Producer, Consumer, and Main reflect the database implementation.

Database now accepts the produced data.

Kafka event stream to front-end has been implemented.

Containerization

- Used a docker-compose.yml file to configure services, networks, and volumes.
- Key components:
  - Kafka: A distributed streaming platform for creating real-time data pipelines
  - Zookeeper: Centralized service that maintains configuration information and provides distributed syncing
  - MySQL: Relational database for storing bus tracking data
  - App: Main application container (Python-based)
  - WebSocket: Real-time communication server for live updates

•Kafka depends on Zookeeper for coordination

•The App service connects to both Kafka and MySQL

•The WebSocket service interacts with MySQL for real-time data updates
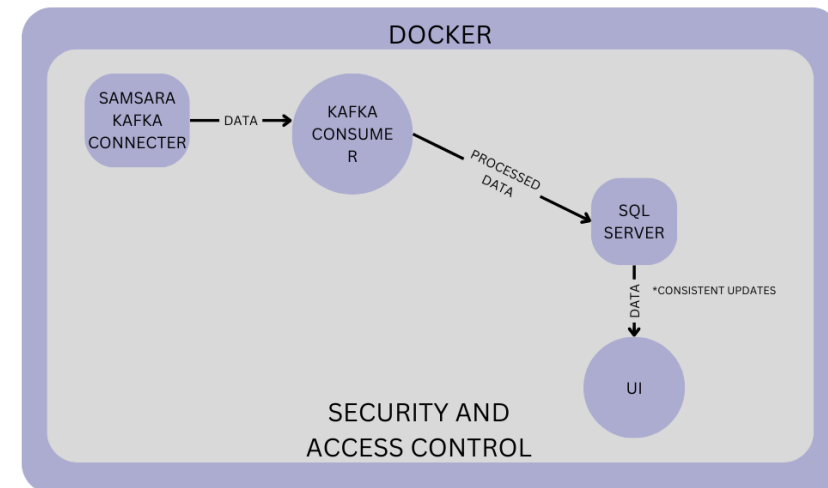
Deployment

- Installed Docker and Docker Compose on the deployment server
- Ensured all required ports are open (3306 for MySQL, 9092 for Kafka, 2182 for Zookeeper, 8765 for App, 8766 for WebSocket)
- Set up any necessary environment variables and configuration files
- Used Docker Compose to build and start all services
  - docker-compose up –d

- Checked if all containers were running
  - docker-compose ps

- Challenges
  - Altered docker-compose.yml when existing services used required ports
  - Added a start-up script to create necessary Kafka topics if they didn't already exist

Documentation

Design document has been updated to reflect changes for this deliverable

Testing document will be completed by the 17th

User manual will follow the C-Day presentation

Timeline

Task	Description	Deadline
Docker Containerization	Package the system in a form that can be used in any environment.	11/17
Testing & Test Document	Analyze the system and test all test cases to assure quality and verify all requirements.	11/17
Project Refinements	UI refinements, resolve issues,	11/18
C-Day Presentation	Showcase the project to the CCSE department	11/19
Final Presentation w/ Professor	Present this capstone project for the group's professor.	11/21
User Manual Document	Describe the process of installing the packaged system across devices and using it.	12/2
Final Submission	Finalize software code, docker container, and documentation.	12/2