Team Requirement Document
Group 5- Team 2

Application Controller, Scheduler and Kafka Subsytem

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1. **Functional Overview - Validator,Workflow Manager, Scheduler and Kafka Central Server**

Validator

- Takes appconfig.json, workflow.json and script files information in zip format, validates them against the rule base and stores them into the application repository(Azure Blob).
- Validator is also responsible for adding all the necessary libraries.

Workflow manager

- Is a module of application controller which will be responsible for generating the workflows from the workflow.json file.

Scheduler

- Schedules the user request for application deployment by maintaining a **priority queue** and **cron jobs**. It then selects the appropriate request according to the start time.
- Once the app is deployed

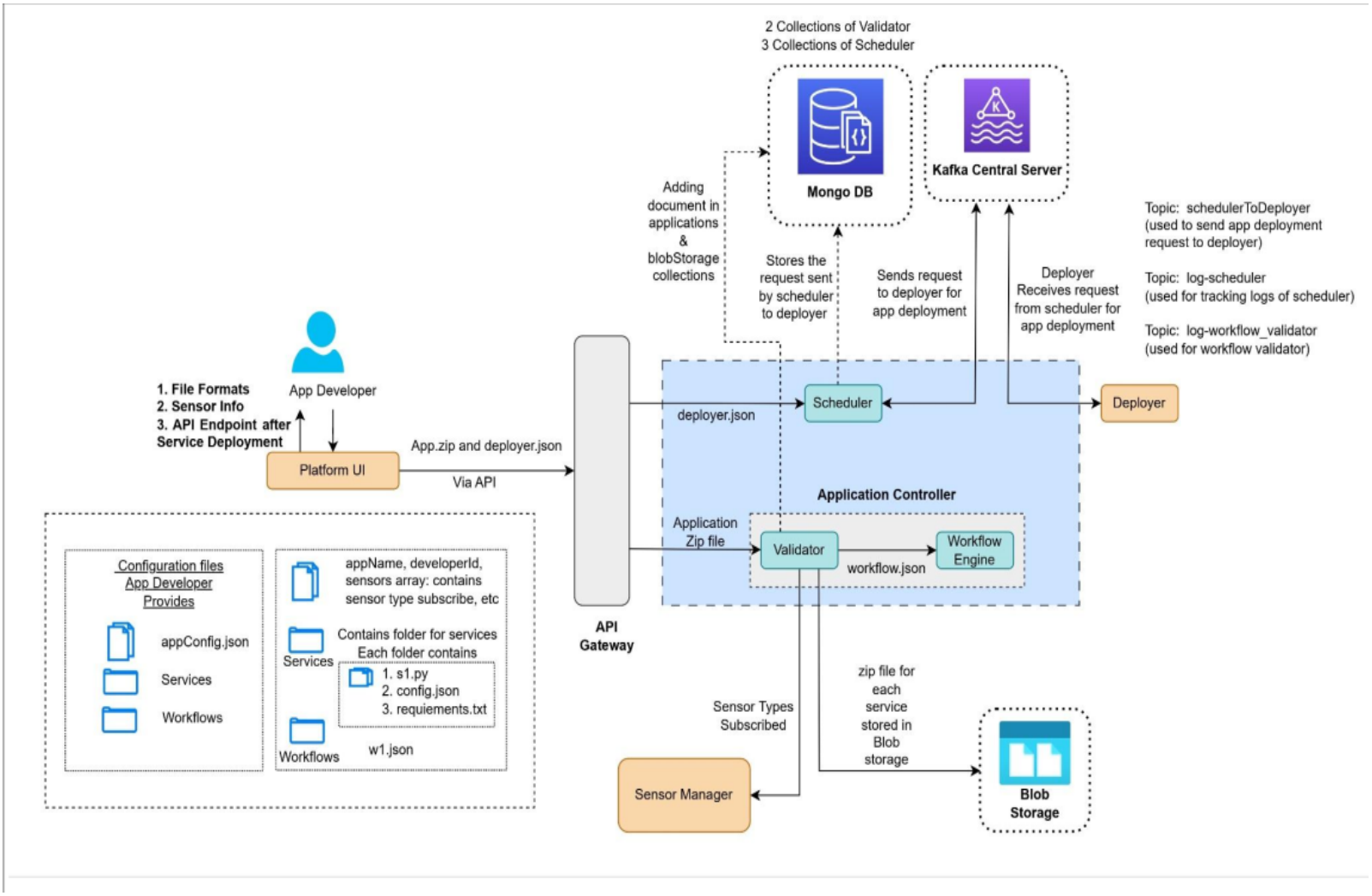
Kafka Central

- It is the backbone communication system of the entire platform which will be used for communication between all the subsystems.

2. List of services:

a. **Validation of App files**: Validates structure of configuration zips submitted by application developer. The structure should be the same as we provided by the Platform Developer in User Interface.
b. **Scheduling**: When the Application Controller delivers the request with the scheduling information, the scheduler retrieves the application zip from the application registry (application id, priority) based on the scheduling information.
c. **Application Repository**: Application Controller stores all the application files after validation and processing (Workflow Manager) in Application Repository database
d. **Workflow Management:** Workflow manager is a module of application controller which will be responsible for generating the workflows from the workflow.json file.

3. Block Diagram:



Interactions of Validator:

1. Interaction with Sensor Manager:Validator provides the sensor information to the Sensor manager (sensor id, sensor type, geolocation etc) upon sensor registration.
2. Interaction with UI: It receives app.exe from the validator via API Gateway and validates it. If some error occurs while validating it returns a response for the same.
3. Interaction with workflow manager: It sends all the workflow jsons to the workflow manager for the creation of script files for the workflow.
4. Interaction with monitoring and fault tolerance.

Interaction of workflow Manager:

1. Interaction with validator: It receives information from the validator for workflows.json.
2. Interaction with monitoring and fault tolerance.

OBJ

Interactions of Scheduler with other subsystems:

1. Interaction with Deployer:
   Scheduler will select the job with the highest priority and send a request to the deployer to deploy the same on a node. Once the job is deployed it receives an acknowledgement from the deployer for the same.
2. Interaction with Monitoring and Fault Tolerance:
   Monitoring and Fault Tolerance interacts with the Scheduler and sends heartbeat messages to perform monitoring at regular intervals.