

Device Data Congestor

1. Definition

The objective of this project (DDC) is to provide an application and framework to be able to collect and congest data from the devices in or outside of the network. Agile methodology will be followed running the project so this document will describe the product backlog as well as release iterations to be taken in order to build the product. Architecture document will sketch the overall components and how they should interact.

Although the devices are the source of data to be processed hence the basis of DDC, here we'll describe the protocol which devices should adhere to while expecting the hardware/device implementation to be done in a team within a separate project.

2. Product Backlog

- 2.1 Measurement devices must have unique IDs
- 2.2 Each measurement device could send data in different type of scale
- 2.3 Easy integration of any measurement device into system
- 2.4 Support secure communication especially for devices outside of the trusted network
- 2.3 High availability for devices emitting data
- 2.4 Durability of measurement data for offline (batch) analytical processing
- 2.5 Provide a means of store enlargement when data space gets scarce
- 2.6 Provide a console for monitoring traffic from devices

3. Release Plan

3.0 Proof Of Concept v0.1 - Simple pipeline with fake measurements

3.0.1 Define measurement data JSON which is emitted to Message Queue from Device Adapters

3.0.2 Implement a simple Device Adapter Service which is reading from file/stream and emits fake measurements

3.0.3 Install, configure and run RabbitMQ

3.0.4 Install, configure and run Redis server

3.0.5 Define Redis storage format to persist devices' measurement count

3.0.6 Implement Queue Listener Service

3.0.7 Define data JSON format which Counter Service will provide

3.0.8 Implement Counter Service (REST) - simple list all measurement counts without filter

3.1 Release v1.0 - initial integration of real devices and more data services

3.1.1 Provide device statistics for last update and individual device measurement detail

3.1.2 Integrate real devices with their Device Adapter Services

- 3.1.3 Provide a Web UI (DDC/Console) to see each device's total measurements, data density, and last update
- 3.1.4 Install and run in a container orchestrator (Kubernetes)
- 3.1.5 CI/CD Pipeline

3.2 Release v2.0

- 3.2.1 Secure measurement transfer with mutual SSL authentication
- 3.2.2 Provide Console Mobile UI
- 3.2.3 Implement Platform Redirection Service
- 3.2.4 Implement scaling mechanism for Data Collector
- 3.2.5 Integrate with User Identity Providers and access control