Client Overview

- Client is a group company of a Tier-1 automotive parts supplier operating in 3 continents.
- The client was incorporated to deliver enhanced value through connected car and telematics solutions.
- With manufacturing facilities in Asia and Europe, the client has international offices in North America, Europe, China and Japan.

Business Requirements

- The client had developed a plug-and-play IoT product that reads and sends event logs, trip details, engine, battery health etc. to a mobile app.
- The requirement was two-fold as stated below:
  a) Setup Big Data Infrastructure that supports real-time events – impact alerts, tow alerts, driving violation alert etc.
  b) Develop Advanced Analytics / Machine Learning Algorithms to help car owners optimize their trips based on previous trips across multiple drivers, monitor driving behavior of their kid/driver and their vehicle’s health.

Key Challenges

- Design of a horizontally scalable, low-latency architecture that supported both real-time event processing and batch analytics.
- Balancing tuple processing across the Storm topology using corresponding stream grouping, to ensure that a car’s data was processed by the same Storm bolt.
Our Approach

- We designed and implemented a Big Data infrastructure inspired by lambda architecture that consists of both batch and speed layers.
- We developed a custom algorithm to calculate driver score and optimize trips based on past trips across drivers.

Our Solutions

- The car owner’s mobile app persists IoT sensor data in MongoDB. We used Kafka to stream MongoDB’s data to – a) Synchronize it in HBase for near real-time Trip & Driver Score Analytics using Spark MLib, and b) Process real-time events by Storm, in addition to real-time Trip & Driver Score Analytics.
- The Trip & Driver Score Analytics output was loaded back into MongoDB.

Results

- The product bundled with analytics was successfully launched, and is currently sold as a safety and convenience device.
- International Automobile manufacturers rebrand and sell the IoT product and platform we’ve delivered.

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