Problem Statement

A vehicle fleet company has telematic devices fitted in their vehicles. These devices emit constant data which need to be sent to the backend. The data emitted is as below

- Latitude and longitude of the vehicle at the given time
- Percent of fuel left at the given time
- Vehicle speed at the given time

You need to design the backend system which

- Can receive and save the data from the vehicles telematics devices
- Generate these reports from this data
    - Total distances covered by each vehicle - daily /monthly
    - How many vehicles did overspeeding & details of each overspeeding vehicle - daily/monthly
- Design the system in such a way that 3rd party developers can leverage the APIs of this platform for building new capabilities around the data available.
- Design the system to have monitoring and execute a set of actions based on rules (for e.g. send a notification if speed is above 80 kmph). System should be able to configure different actions and rules.

Expectations

- List down the Assumptions you will be taking for designing this system.
- Important APIs and corresponding schemas
- Data Model - Entities or database table/column names
- High level components in the system - A diagram depicting the components
- Technologies and frameworks used for backend , database, reports generation
- How will you scale the back end? Capture the design considerations for scaling the system from thousands of vehicles to a couple of millions of vehicles concurrently using the solution.
- How security of data in motion and at rest will be handled.

Suggestions

- Please try to avoid any Aws/Azure/GCP services usage

Points to remember:

- Proper Understanding of the problem
- Clearly lay out the assumptions.
- Justify the Design and the Considerations.
- Walk through the components and data flow.
- Working Code - plus.
- Scalability & Resiliency of the solution.
- Tools relevant for building the end to end system.