**IoT Software**

IoT consists of two parts one is software and the other is embedded devices, which sends / receive data.

Embedded side firmware is written to achieve connection to servers hosted on cloud most of the time and read the sensor data, construct payload based on API’s of platform and then send it. Much things is not implemented due to memory, speed and bandwidth constraints

From the software side the software architecture should be properly designed and mostly consists of layered architecture namely device layer , network layer and the application layer.

The software architecture should support following things namely

1. Data Collection

The data collected from sensor device is pushed to an IoT platform. After receiving data platform and should be able to do a light processing on data. Sometime devices sends data to an IoT Edge where data collection done locally and pushed to platform periodically. Therefore, data collection layer has prime importance in building the entire application.

1. Device integration

The embedded device is physical entity and the logical entity is created in platform that is popularly knowns as device provisioning.

The data sent from physical devices has to be uniquely identified as a logical entity in platform. Physical devices are uniquely identify username, passwords, Access tokens and certificates, which identifies the physical devices logically.

1. Real time analytics

Data streaming to the platform is analyzed on the go, applying rules defined. With the real-time analytic engines, the convention method of querying the database to check the value is ruled out because of latency offered in IoT. So real-time monitoring of streams are done in parallel.

1. Application

Application layer plays an important role in IoT from business prepective.

The platform might have collected all data sent by device. Depending on the business use-case, the data representation is done. For example, GPS device sends lot of information regarding location and identity, for school bus the application requires speed of vehicle as prime factor and same GPS data for fleet monitoring speed of vehicle may not be prime factor. Thus , based on the use-cases dashboards are to be developed for better visualization.