T-Box Requirement

12-Sept-2022

|  |  |
| --- | --- |
|  |  |

# 

Table of Content

[**1 High Solution Architecture**](#_lsnpeop5icnb) **3**

[**2 MQTT Requirements**](#_no1jww1f0e7l) **3**

[**3 MQTT Operational Command List**](#_mpvw88rq2rww) **6**

[3.1 Events - Topic (messages - Publish) - Sent Every 30 sec (Should be configurable)](#_738v44hak2b4) 6

[3.2 Operations - Topic (rpcRequest - subscribe and rpcResponse - publish)](#_1ohehk4aavqr) 11

[3.2.1 Configuration](#_gfof5nxiku4e) 12

[3.2.2 Actions](#_8knr9u18v37) 13

# 

# 1 High Solution Architecture

MQTT Broker

SLMobility Platform

Publish

Subscribe

T-Box

Scooter

Controller

Battery + BMS with CAN Supported

CAN Bus

# 

# 2 MQTT Requirements

|  |  |  |
| --- | --- | --- |
| Requirement | Comply or Not | Comments |
| 1. Each station will connect to MQTT Broker provided by AWS or Similar |  |  |
| 1. Connection is secured with TLS v1.2 |  |  |
| 1. SLMobility will provide the host and port for the MQTT Connection |  |  |
| 1. Each Connection i.e. each T-box, is authenticated via a Private Key (PEM RSA Key).   SLMobility will provide the Private Key, Certificate and CA Certificate for each station |  |  |
| 1. MQTT Topics should follow the standards below   /deviceTypeId/vendorId/deviceId/topic  Where SLMobility will provide a   * deviceTypeId (unique UUID V4 i.e. 36 char wide) * vendorId (unique UUID V4 i.e. 36 char wide)   This will unique to theTBox Vendor   * deviceId (unique UUID V4 i.e. 36 char wide)   This is unique to each T-box   * Vendor can specify topics, however minimum following topics should be available  1. messages - for general periodic messages published by the device (Tbox) 2. rpcRequests - RPC requests from SLMobility Platform. Devices are expected to subscribe to this topic 3. rpcResponse - RPC response from the device i.e. publishing to this topic   If vendor needs any other topics, please mention |  |  |

# 

# 3 MQTT Operational Command List

NOTES

* This is the minimum requirement if the vendor has anything beyond this please add.
* MQTT Payload is expected in JSON
* Should be able to cache and send as required

## 3.1 Events - Topic (messages - Publish) - Sent Every 30 sec (Should be configurable)

|  |  |  |
| --- | --- | --- |
| Requirement | Payload | Fields |
| Eg1. Send Station Online or Not | { "eventId": "aabbcc", "event":"station\_online", "online":true, "created\_at": 1656486036 } | |  |  | | --- | --- | | Field | Type | | eventId | String 36 | | event | String 36  options : station\_online | | online | Boolean | | created\_at | UNIX Timestamp | |

### 3.1.1 Status Message (Sample)

|  |  |  |
| --- | --- | --- |
| Name | Field Name | Data Type |
| Timestamp | UNIX Timestamp |  |
| GPS Coordinates | E.g Longitudes and Latitude |  |
| Battery BMS ID |  | 1000-1012 |
| Battery Percentage |  | 2 |
| Battery Temperature |  | 6 |
| Battery Current |  | 4 |
| Battery Voltage |  | 0 |
| Battery Errors |  |  |
| Motor RPM |  |  |
| Gear Information |  |  |
| Throttle |  |  |
| Break Status |  |  |
| Motor Temperature |  |  |
| Break Info |  |  |
| Side Stand Info |  |  |
| Light Info |  |  |

Please include any other information that you can capture

## 3.2 Operations - Topic (rpcRequest - subscribe and rpcResponse - publish)

NOTE:

* In order to track the request and response the same correlationId should be used between messages. CorrelationId will be assigned at the rpcRequest i.e. from SLMobility Platform and when responding by the device should use same correlationId

E.g.

Action 1 Request : correlationId → COR\_001

Action 1 Response : correlationId → COR\_001

### 

### 3.2.1 Configuration

|  |  |  |
| --- | --- | --- |
| Requirement | Payload | Fields |
| 1. Ability to configure the station status sending frequency in seconds |  |  |
| 1. Ability to load configurations such as    1. MQTT End Points    2. Certificates    3. Frequency of sending status | N/A | N/A |
| 1. Ability to update Over-the-air (OTA) |  |  |

### 

### 3.2.2 Actions

|  |  |  |
| --- | --- | --- |
| Requirement | Payload | Fields |
| 1. TBD |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## 