Code Challenge - Platform Engineer - MachineMax

Abstract

Each MachineMax sensor has a unique 16-character (hex) identifier called a DevEUI. As part of the manufacturing process, it is written onto the internal storage of the sensor. The DevEUI is also printed on a label on the side of the sensor alongside a 5-character code (the last 5 characters of the DevEUI). E.g. a DevEUI of 78111FFFE452555B would have a short-code of 2555B
The sensors communicate with the MachineMax cloud though a LoRaWAN provider and the LoRaWAN provider uses the DevEUI to identify the sensor. This means we first have to register the DevEUI with the provider before we can use it.
We pay for every device registered with the LoRaWAN provider so it is important that we only register DevEUIs that we use*.
When a customer registers a new sensor, they will enter the 5 character short-form code instead of the full DevEUI so it is essential that each DevEUI in the batch has a unique 5-char code (for lookups).

**this is not strictly true but it makes the challenge more interesting*

Challenge

Write a program that can be run by the technicians on the production line just before assembling the sensor units. They will note the output and feed it into the production system. The technicians can sometimes be impatient and may kill the process if it takes too long.
A stretch goal (as a future improvement) is an API that the production system can integrate with directly.

1. Write an application (CLI) that creates a batch of 100 unique DevEUIs and registers them with the LoRaWAN api.
2. (Stretch) Write an API with an HTTP interface that creates the batch and returns it to the client.

Requirements

1) **CLI**
    a) The application must return every DevEUI that it registers with the LoRaWAN provider (e.g. if the application is killed it must wait for in-flight requests to finish otherwise we would have registered those DevEUIs but would not be using them)
    b) It must handle user interrupts gracefully (SIGINT)
    c) It must register exactly 100 DevEUIs (no more) with the provider (to avoid paying for DevEUIs that we do not use)
    d) It should make multiple requests concurrently (but there must never be more than 10 requests in-flight, to avoid throttling)
2) **API**
    a) The request must be idempotent. It is possible that the production system could timeout or make multiple requests simultaneously and each request should return then same set of DevEUIs
    b) The response should be a json body with an array of 100 elements {“deveuis”: [“FFA45722AA738240”,....]}

LoRaWAN API

The registration operation is an HTTP request to the LoRaWAN provider’s API. The details are below

```
host: europe-west1-machinemax-dev-d524.cloudfunctions.net
paths:
  /sensor-onboarding-sample:
    post:
      consumes:
        - application/json
      parameters:
        - in: body
        - required: true
        - type: string
        - name: deveui
      responses:
        200:
          description: The device has been successfully registered
        422:
          description: The devEUI has already been used
```