Modeling

Physical proof-of-concept model:

* Raspberry Pi running AWS IoT Greengrass Core
* PC logged in to AWS IoT console, also logged in to Pi via PuTTY
* “Hello World” Python lambda function deployed to Pi
  + Sends “hello world” from hub device to AWS cloud
* Test MQTT client receives, logs, and displays messages

This model shows that it is feasible to use AWS IoT Greengrass as a platform, since the lambda function can be easily modified to receive sensor data and send it out as JSON-formatted data. The Raspberry Pi is shown here to be a perfectly capable hub device.

In addition, the model shows that using AWS IoT Greengrass will help achieve a couple of the project’s goals. Public-key authentication is used to add the hub device to the AWS network. The data is encrypted as it travels between the hub and the AWS cloud, so both authentication and encryption are taken care of. The third element, JSON-formatted sensor data, is relatively simple to implement with Python’s JSON library.

Implementation Plan

Experimental Design

Data Analysis

Budget

Initial Budget

Most Recent Budget

Appendices

File Management/Archiving:

We decided to use a Google Drive Folder to organize initial documents. We chose this for ease of use and access, as well as the excellent integration with Google Docs and Sheets.

The plan for the future is to organize any of the code written for this project into a Github repository. This will allow for organization and version control, which is especially important with code and software.