Problem:

Basically we have to set up a server to take an input from a website or mobile device, push it through the GE server (who we will communicate with using an IP address and appliance ID), and then send it to our MQTT broker. Our actual appliance logic will exist in MQTT, which will affect our hardware on a Raspberry Pi (which simulates virtual appliances). For example, if “open door” on “refrigerator” is the input, a light on the circuit specified for the refrigerator will turn on. MQTT and the servers should also read data from the hardware (e.g. is the light turned on/is the door open?)

Solutions:

Currently, we are using python to code both broker and client code for MQTT (which will include the logic for the virtual appliances). We are also using python and a private IP address (Jay knows someone who is helping us gain access to an IP address) to create a server to communicate with GE. We are implementing the Flask library to help us with this. We believe that a private IP address coded in python is a much easier way to achieve our goals than using a web service such as AWS. Vamshi is also looking into AWS as an alternative in case we can’t gain access to an IP address.

Previously, we thought we didn’t need a private server and would merely take inputs from a device and use MQTT to change the hardware. After our recent visit to the company, we understand the need for a server and the security aspect of communicating with the GE server. At first were merely focusing on setting up our Pi (we ran into some snags with the availability of equipment to set up the pi, but it is working now) and learning about IOT and how everything works. We spent the first few weeks mostly researching messaging protocols and device communication. I originally spent some time trying to code an app using virtual studio, but abandoned that when I realized that it was not necessary or an efficient use of our time. We had some trouble setting up MQTT but that is set up as well now. We are still in the process of coding in MQTT for the virtual appliances.

While we believe at the moment that we will have little trouble setting up the server, we are still a little confused as to how to get the input from a phone or website to our server and MQTT. We are looking up solutions involving an IBM or similar type android app (which we can code in python flask with a Bluemix account, which I have already signed up for, or MIT app inventor). We are also still a little fuzzy on how to communicate with the GE server without having access to exactly how it works, but we are discussing it and gaining an understanding.