Last Edit: 07/08/2023

ACQUAOUNT PLATFORM

Use Manual

Description Of The Platform

The Acquaount Platform is a web server hosting a Web Of Things Thing. A Thing, in this use case, represents a field in the real world (to be more precise, a physical location). Everything that can be done with this thing is specified in the Thing Description, a document in JSON format.

Each Thing Description has 3 main sections apart from various separate attributes: the properties, the actions, and the events. Inside each of these sections everything needed to use them is described, from the body required to use them or the format of the data being returned.

The properties represent properties of the Thing, and in normal cases can be read or written (in this case, just read). The actions are physical actions that the Thing can do which can be invoked. Finally, the events are occurrences that happen at a specific moment to which the client can subscribe to to be notified when they happen.

The properties available in the platform are:

- fieldInformation: Provides some static information about the field of this thing.
- sensorsList: Provides a list of the sensors in this field.
- sensorInformation: Provides detailed information about one of the sensors.
- propertiesList: Provides a list of all the properties being observed at this field.
- propertyInformation: Provides detailed information about one of the properties.
- datastreamsList: Provides a list of datastreams in the field. A datastream is the flow of data defined by the combination of a Thing, Sensor, and Property.
- datastreamInformation: Provides detailed information about one datastream.
- datastreamLastMeasure: Provides the last measure taken in a specified datastream.
- datastreamMeasures: Provides all the measures taken in a specified datastream.
- lastMeasures: Provides the last measures taken in all datastreams.

The only action available is:

- receiveMeasure: Used as an endpoint for the sensors to upload data to the platform.

The only event available is:

- newObservation: This event is triggered every time there is a new measure in the system.

How To Use The Platform

The platform can be used through HTTP requests or through the node-wot open source client, which was also used to implement the platform. The various attributes can be tested by forking the Postman collection found here.

Currently, the platform can be accessed through the following address:

http://84.88.76.14/acquaountthingdemosite

The IP seen is the address of the platform, and the /acquaountthingdemosite is the Thing that is being accessed. In the future, there will be more than one Thing, but they will all follow the same structure.

Properties

Properties can be read using a GET request. By making a request to http://84.88.76.14/acquaountthingdemosite/properties, information of the properties to call will be returned. To access a specific property, the URL is:

http://84.88.76.14/acquaountthingdemosite/properties/name_of_the_property

Some properties do not require any extra information, but some require a parameter in the URL to specify which instance in detail the user is interested in.

Actions

The only action to be called is called using a POST request. Its URL is:

http://84.88.76.14/acquaountthingdemosite/actions/receiveMeasure

This request does not take parameters, but it takes a body. This body is a JSON object with two keys, “info” and “values”. The value of the “info” key is an object with another key, “deviceID”. The value of this key is the ID of the sensor that took the measurement. The value of the “values” key, on the other hand, is an object with multiple key/value pairs. In the “values” object, each key is the name of a property, and each value is the value observed in the measurement of that property. This way, each measure has a Property, Sensor, and Thing, so it specifies a Datastream where the measure will be stored.

It is vital that the specified Datastream is present in the Datastream Definition Google Sheet, or else the measures will not be uploaded to the platform.

Events

Events cannot be subscribed to with standard HTTP requests since they require a handshake and constant connection. The only way to subscribe to an event is using the node-wot client, with the fetch command and the subscribeEvent handler. An example can be found in the source files of the project.

Data Integration

To integrate data from external platforms, a Python service which fetches the data has been created. This service can run different jobs which fetch data from external sources, and then upload it to the platform as a standard Datastream, therefore, the external sources will also be listed in the Datastream Definition Google Sheet.

To specify an external source in the Datastream Definition, most attributes are to be filled in the same way as one would fill a normal Datastream, with a few exceptions:

- Device ID: Specify a new ID for each data source, differentiating from the way sensor IDs are specified, for example, use DX001 for an external data source related to the Demo pilot.
- Device Type and Description: Specify the type of device is “External”.
- Device EUI: Can be blank.