Server Data Collection API

Santtu Nyman

# API specification

This is not final API specification. Some of things are unclear to me like is the “instance” in the URL constant string or is it supposed to be replaced with the device unique serial number and how notifications of water orders and people bypassing are sent, but I still wrote something.

In Cool Wear Dispenser project, we collect useful data from our water dispenser device to our server for optimizing the usage of the water dispenser. The collected data contains locations of devices, device water usage, device water temperature and how many people are bypassing the device. Much of this data is send from the devices to our server where it is collected to a database. The devices require an API that they can use to send the data to the server. This API needs to be tightly specified to avoid compatibility issues in communication between dispenser devices and server. The data collection API is build over HTTP protocol (HTTP 1.1 protocol). The devices use HTTP post requests to send the data to server. The API specifies the format of post requests send to the server. In the post request the data that is sent in the request is placed in the values of key value pairs and the names of the keys are used to identify what data is in the values of the pairs. All numerical values that are send to the server are in base 10 and some times contain symbol ‘.’ followed by decimal digits for representing real numbers. In all post request from the devices the value of pair which key is name is “device\_id” is the unique serial number of the sender device. The devices do not know all data about themselves. This limits the data the devices can send to the server. The data dispenser devices can send is device unique serial number, current time, time when water was chanced, current water tank temperature, current water level in the tank.

# Transferring periodic measurements

The devices send measurements of tank’s water level and temperature periodically to the server. The URL of this post request that has the periodic measurements is “[www.example.com/api/instance](http://www.example.com/api/instance)” and the “[www.example.com](http://www.example.com)” in the URL is replaced with the name or IP address of the server. Value of pair which key name is “waterlevel” is water level in percentages of the dispenser’s water tank. Value of pair which key name is “lastChangedTime” is Unix time stamp of last time when, water from the water tank was changed. Value of pair which key name is “temperature” is water temperature in Celsius of the dispenser’s water tank. Value of pair which key name is “mode” is the operating mode of the device this value is 0 or 1. If this value is 0 the device is sleeping in sleeping mode where it does not serve water for user or try to measure if people are passing by and when this value is 1 device is operating normally. This post request is sent to port number 8000.

# Transferring bypassing notification

The device sends a notification each time person passes by it to the server. The URL of this post request that has the data of bypassing notification is “www.example.com/api/bypassing” and the “[www.example.com](http://www.example.com)” in the URL is replaced with the name or IP address of the server. Value of pair which key name is “time\_stamp” is Unix time stamp of bypassing event. This post request is sent to port number 8000.

# Transferring water order notification

The device sends a notification to the server each time water is ordered from the device. The URL of this post request that has the data of the order notification is “www.example.com/api/order” and the “[www.example.com](http://www.example.com)” in the URL is replaced with the name or IP address of the server. Value of pair which key name is “time\_stamp” is Unix time stamp of bypassing event. Value of pair which key name is “order” is the size of the order “1” is smallest order “2”, medium and “3” is the largest. This post request is sent to port number 8000.