Report on the HEPIA datacenter

Smart HEPIA is an IoT platform used to measure temperature, humidity, brightness, physical presence and energy consumption inside the HEPIA building at Geneva. The platform is also used to control blinds, radiator valves and lighting. The Smart HEPIA project has been designed and implemented as a joint initiative between HEPIA (http://hepia.hesge.ch/) and Mandat International. All the devices installed in the HEPIA building has been integrated by Mandat International onto the IoT Lab Testbed as a Service (TBaaS).

An extension of Smart HEPIA has been realised by the Mandat International team for the HEPIA datacenter. This extension involves several partners:

- The Republic and Canton of Geneva: the owner and the manager of the HEPIA building;
- The University of Applied Sciences and Arts of Western Switzerland, through the Haute école du Paysage, d'Ingénierie et d'Architecture (HEPIA) in Geneva: the main occupant of the HEPIA building and also the manager of the IT infrastructure at HEPIA;
- Mandat International: coordinator of the IoT Lab European project.

The goal of the extension into the datacenter is to monitor the current state of the room, in particular the temperature. The different types of data retrieved from the sensors are the temperature, the humidity, the illuminance and the presence. The temperature is the most important parameter to monitor into the HEPIA datacenter, while currently, this datacenter is not so well equipped to regulate the temperature.

The IoT hardware used into the HEPIA datacenter is composed by:

- A Raspberry PI, acting as a gateway between the wireless sensor network and the wired IPv6 network. The wireless protocol for the sensors is Z-Wave.

Illustration 1: Raspberry PI

- A Z-Wave/USB dongle plugged into the Raspberry PI.

Illustration 2: Z-Wave/USB dongle

- Four Z-Wave sensors able to measure the temperature, the humidity, the illuminance and the motion. The location of each sensor was determined with the help of the different partners in function of the current HVAC installation.

Illustration 3: Z-Wave sensor

After the installation of the sensors and the Raspberry PI into the HEPIA datacenter, the engineers of Mandat International had taken care of the software and afterwards, had integrated the new sensors into the IoT Lab TBaaS.

The values provided by the sensors are available on the IoT Lab website, through the Smart HEPIA datacenter experiment. The following picture shows an example of a graph realised with the help of the Smart HEPIA and IoT Lab platforms.

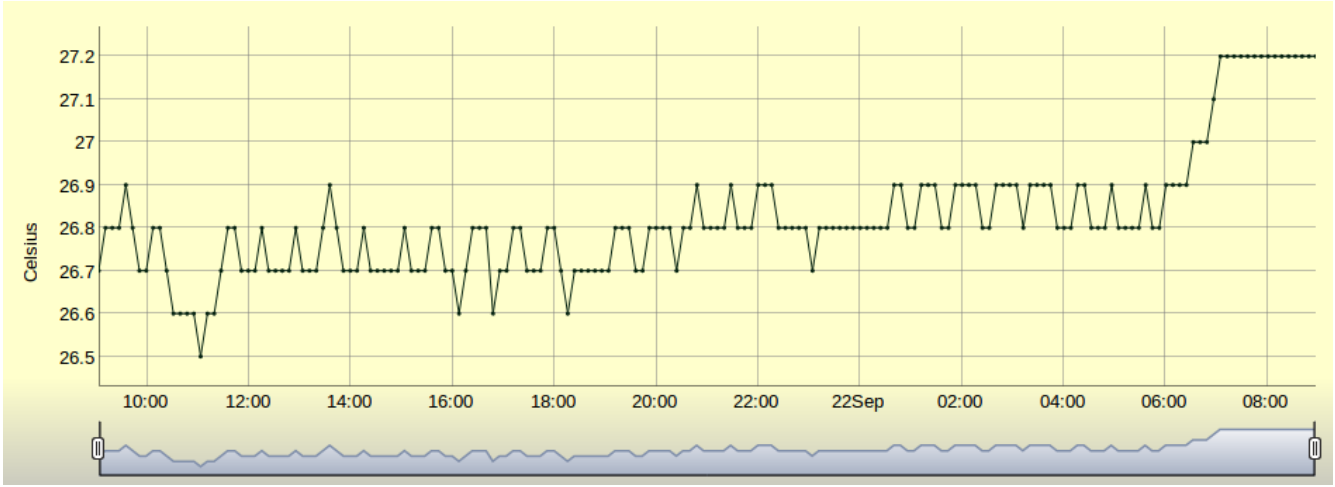

Illustration 4: Temperature inside the HEPIA datacenter