Hack The Office – Obix guide

1 What it is

The purpose of the OASIS Open Building Information Exchange (oBIX) TC is to define a standard web services protocol to enable communications between building mechanical and electrical systems, and enterprise applications. (http://www.obix.org/what.htm)

oBIX (for Open Building Information Exchange) is a standard for RESTful Web Services-based interfaces to building control systems. oBIX is about reading and writing data over a network of devices using XML and URIs, within a framework specifically designed for building automation. (https://en.wikipedia.org/wiki/OBIX)

Full specification: http://docs.oasis-open.org/obix/obix/v1.1/csd01/obix-v1.1-csd01.html

2 How I can access it

1. Join the **Wireless Network** with SSID "**CaverionHTP**" and pass "**SpaceSag4**"
2. You have two real life buildings to access:
    a. **http://192.168.1.201/obix/** – Lintuvaara School and Daycare in Espoo.
    b. **http://10.2.15.18/obix/** - Ratinankaari Office Building in Tampere.
3. Authentication credentials for both buildings is **caverionhto / hto20161111**
4. Authorization:
   Add header named "Authorization" with value "Basic " + <base64 encoded string from string "username:password"> for your requests. Ie. "Basic dGVzdDp0ZXN0"
5. Root of obix is called Lobby: http://192.168.1.201/obix/
6. Web service description: http://192.168.1.201/obix/wsdl
7. You can check that everything is working from About page:
   http://192.168.1.201/obix/about/

3 What I can do with it

You got access to interface that includes all the sensors and control devices states in both buildings. You have a possibility to read current or historical data from sensors ie. Temperature, carbon dioxide, electric consumption, valve states...

4 About Building Automation

Building automation system consists of server (this is what you access to) which have a 3-4 central prosessor units. Under every CPU there is number of sensors or other field devices. Objects.

If you like to read current value of sensor you need to navigate directly to CPU /obix/config/drivers/NiagaraNetwork where you can see all the CPUs and the server itself (_WS). After you navigate inside CPU you can find path points where is folders and objects. Ie. Temperaturę in room A135:
http://10.2.15.18/obix/config/Drivers/NiagaraNetwork/Ratinankaari_K61/points/KerrosA1/A135/TE16/out/

Best way read history values is read then from server with path obix/histories/ there you can find same list of CPUs. Ie. Room A135 temperature history
http://91.152.192.14/obix/histories/Ratinankaari_K61/TE16_A135/~historyQuery?limit=1000

5 About objects naming

Objects are named mostly mixed with Finnish and industry specific abbreviation. Names also may vary between buildings. Like in this case. So it might be a hard to understand. Here is few descriptions about naming.

- Object name contains first main system tag and then object tag.
- Heating systems starts with 1. So G10xxxxx / LJ10xxxxx items are heating system objects.
    - 100 = Incoming water ie. Domestic heating. G100TE41 = incoming water temp.
    - 101 = Radiator network. G101TE41 = Dispatching water temp from heating to radiators.
    - 102 = Air handling network.G102TE41 = Dispatching water temp from heating to AHUs.
    - 103 = Floor heating network..G103TE41 = Dispatching water temp from heating to floor heating.
- Air handling starts with 3. So TK301/G301 means air handling unit 1
    - TK301TE10 = Dispatching air temp from air handling unit to room.
- Cooling starts with 4.
- Few common sensor tags: TE = temperature. QE = carbon dioxide (CO2), ME = moisture and PDIE/PIE = air pressure.
    - Outside temp history in Ratinankaari: http://10.2.15.18/obix/histories/Ratinankaari_K62/%243101TE00/
    - Outside temp history in Lintuvaara: http://192.168.1.201/obix/histories/LINTUVAARA_21/TE00/
- Sensor numbering increases in accordance with the flow direction of water or air. In air handling unit it might be like TE00 is outside, TE10 after incoming fan and TE19 after outgoing fan.
- Few common field device tags: FV = valve (% open), FG = damper motor (% open or on/off) and SC = fan speed.
- Electric meters is tagged with EQ. Ie. 901EQ01 is building main meter.
- Heat consumption is QQ.

6 Notes

Obix not allow object names start with number so the might be a $3 before the object name 901EQ01 = $3901EQ01. There are also some other special characters replaced.

Please try to avoid large loops of request against services.