An enterprise grade project with

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Introduction

The project need erected based on the needs of the client that spent 25 years in office buildings with no automation, or very poor automation for the tenants.

The relocation of their offices required the fit-out to very well detailed specifications.
Requirements:

- presence detection for the office area
- movement detection for corridors
- constant lighting
- HVAC control
- access control integrated with presence detection
- UPS management and control
- electrical loads monitoring
- server room monitoring
- control of LCD privacy films on the meeting rooms glass walls
- meeting room management system
- web based application for the monitoring and control of all the automated equipment
- integration with the building existing BMS

Our services for the project

- HVAC detailed design
- Electrical detailed design
- Security/Safety systems detailed design
- Execution of the electrical systems (including the automation systems)
- Commisioning of all M&E systems
- Software integration of all the systems

Technologies/Protocols used

- DALI – Lighting control and monitoring
- KNX – HVAC control, presence, movement detection and user input devices
- RS-485 – Access control
- bacNet – Integration with the building's BMS
- TCP/IP – Meeting room management system and overall integration
- SNMP – UPS management
- RS-232 – Multimedia devices specific control

Sheer numbers

- 5700 sqm area equally devised on 3 floors (17-19 out of 26 floors)
- 12 KNX bus lines
- 143 thermostats with 4 freely programmable push buttons
- 143 presence detectors
- 143 fan coil actuators
- 81 movement detectors
- 4 Blind actuators
- 4 switch actuators
- 15 DALI gateways
- 12 KNX/IP routers
- 4 KNX/Mitsubishi AC interfaces
- 1 weather station (installed on the roof above the 26th floor)
- 15 DALI bus lines (800 DALI drivers controlling 500 LED and fluorescent luminaries and 2500 meters of LED strip)
- 2 SNMP cards
- 7 in wall mounted tablets
- 2 TB iSCSI shared storage and mySQL embedded server
- 3 clustered Intel NUC Celeron 3700 with 8GB of RAM and 120GB SSD each installed in different locations
- 1 10/100 Mbps PoE 48 port switch
- 1 Gigabit managed switch
- 1 IP router with VPN

Why openHAB

- very short period of time needed for the integration of all the protocols/functions
- modular architecture
- logging
- rule engine
- reliable back end server

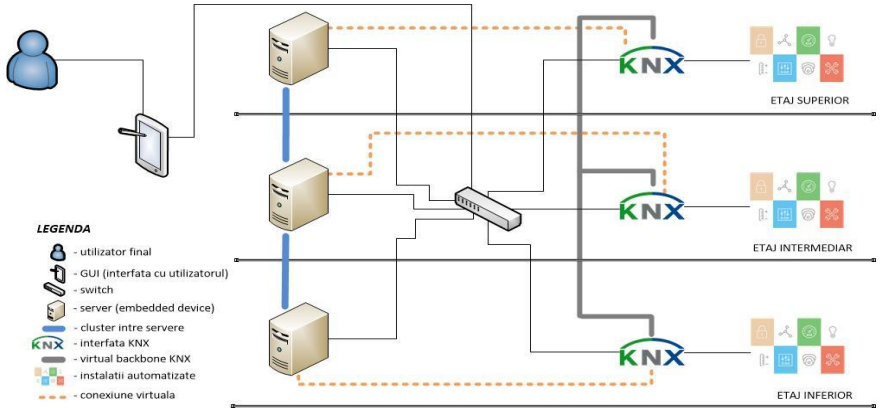
openHAB setup

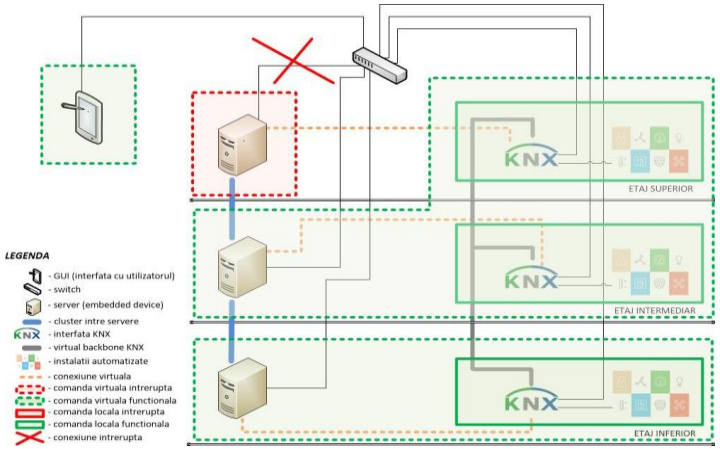
- Version:1.8.2 (there will never be an upgrade to this setup, unless a special requirement comes from the client)

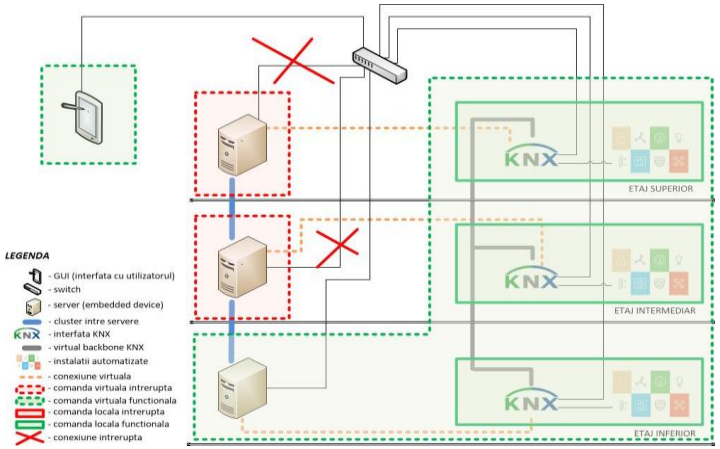
Addons:
- KNX binding
- TCP UDP binding
- HTTP Binding
- Network binding
- NTP binding
- MapDB persistence
- MySQL persistence

openHAB textual configuration
- 15700 items (e.g.: each lighting zone has 4 items)
- 260 rules (e.g.: user intervenes on setting his lighting outside of the constant lighting control)

openHAB setup



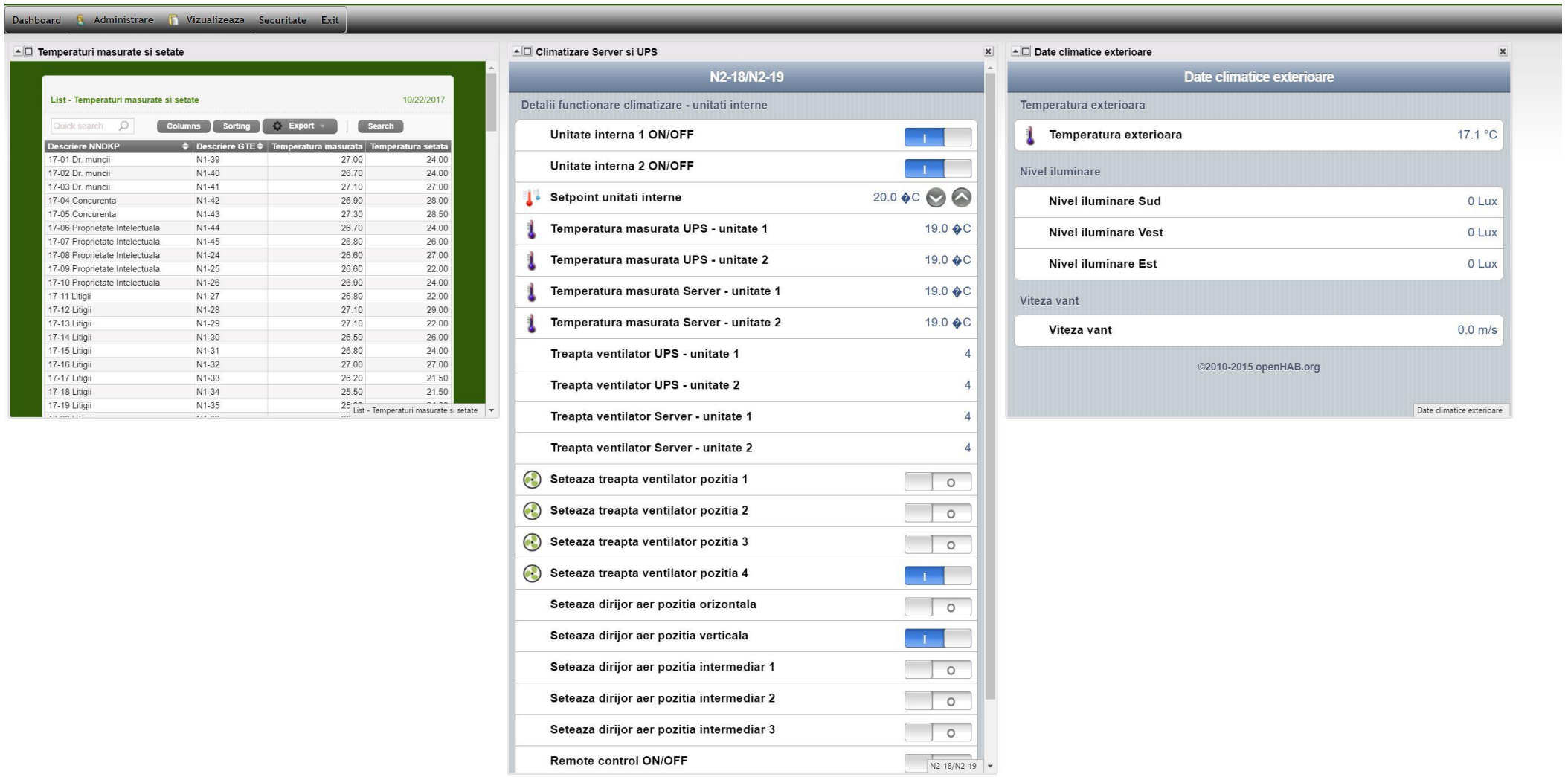




openHAB
empowering the smart home

GTE
Smart Systems

openHAB setup



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Data stored

openHAB creates 5000 inserts/hour in the MySQL database based on state changes and in some cases based on time settings for:

- Measured ambient temperature
- Setpoint for the ambient temperature
- Operating modes of the HVAC equipment
- Reported errors of all the equipment
- Brightness level
- User input (e.g. pressing of a push button)
- Reported operating hours of equipment
- …

Basically… everything monitored!

Photos

Photos