Belimo Digital Ecosystem

The Niagara Driver for connecting to the Belimo Cloud API

Date: 02/09/2022

Contents

This is a guided demonstration about installation, activation and use of Belimo driver for Niagara framework.

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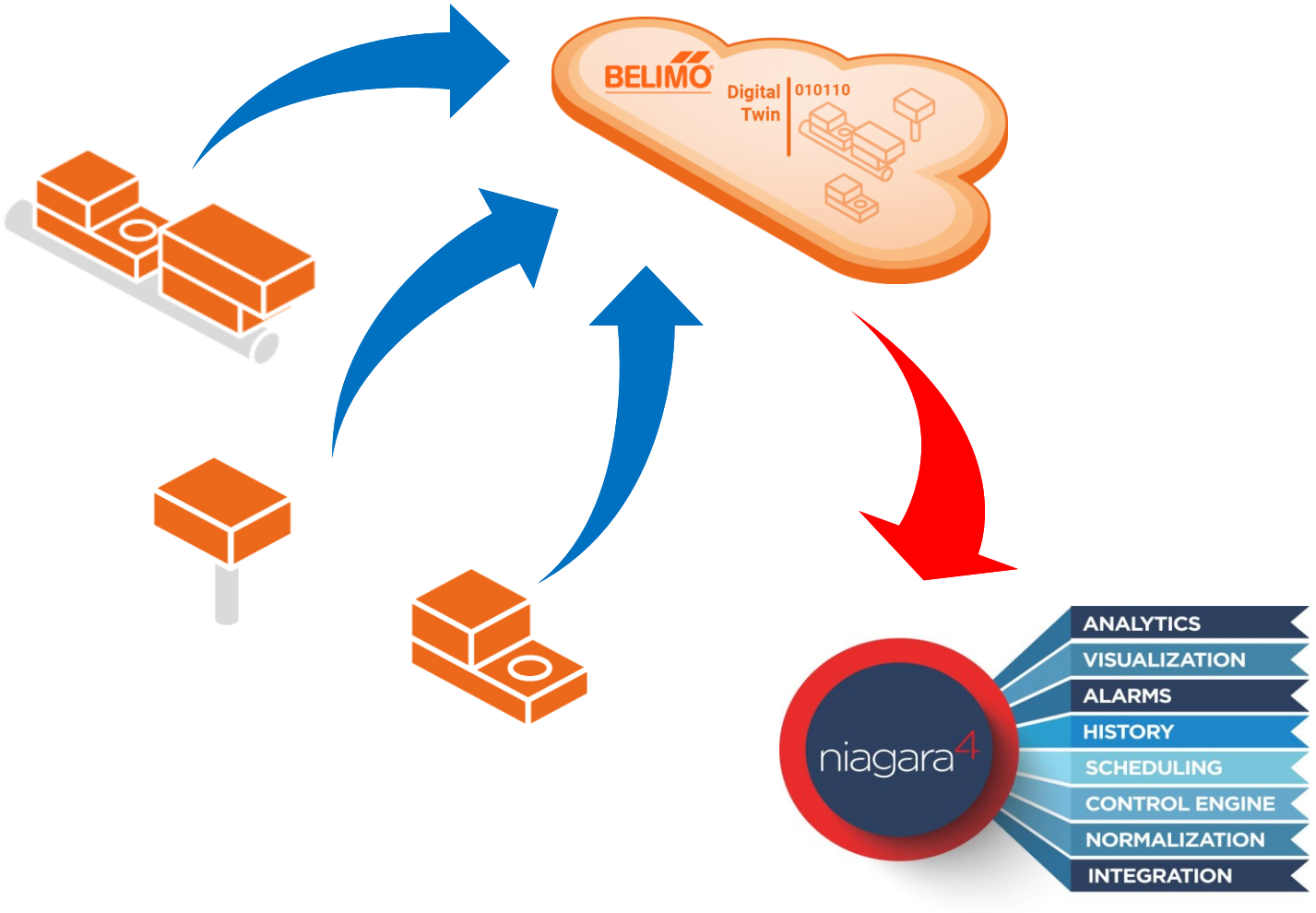
The driver

The Belimo driver for Niagara framework allows N4 supervisor or Jace 8000 to display your Belimo Energy valve data.



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Requirements

- Basic knowledge of Niagara 4 framework
- A Workbench PC installation
- A supervisor licensed installation
- Enough licensed resource points
- An active account on the Belimo Cloud

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Installation

Next steps are about installation of the driver before its use

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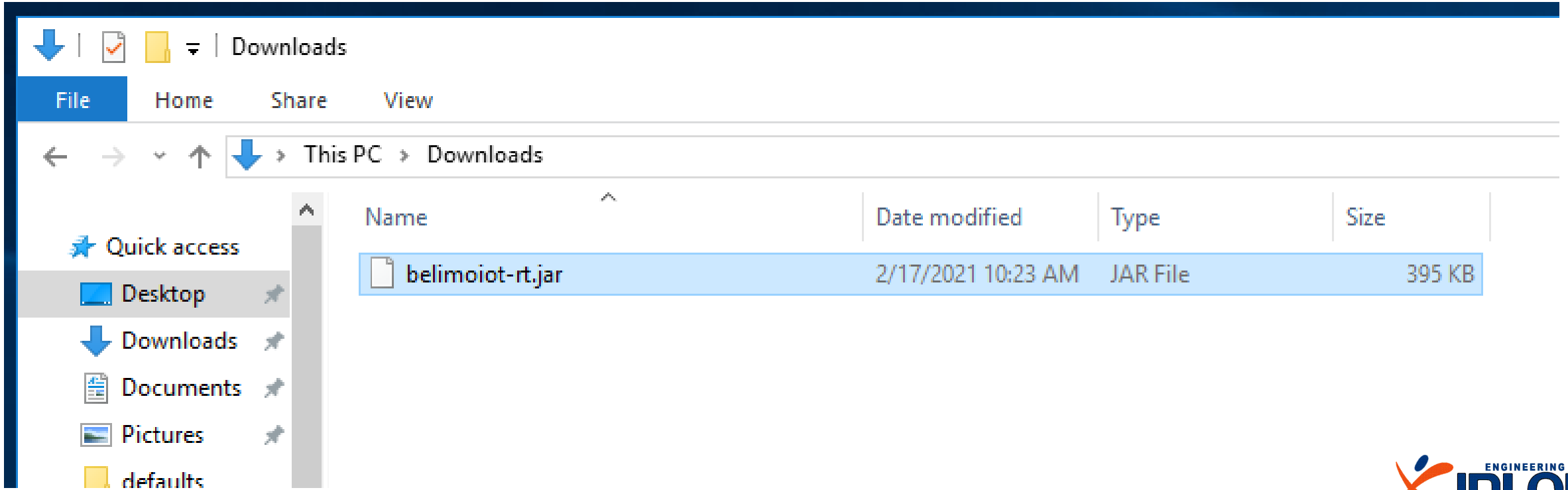
The jar module

The driver is distributed by INLON for free in this first version. The module and documentation can be downloaded from

github.com/inlon-engineering/niagara-belimo-iot

SCAN ME



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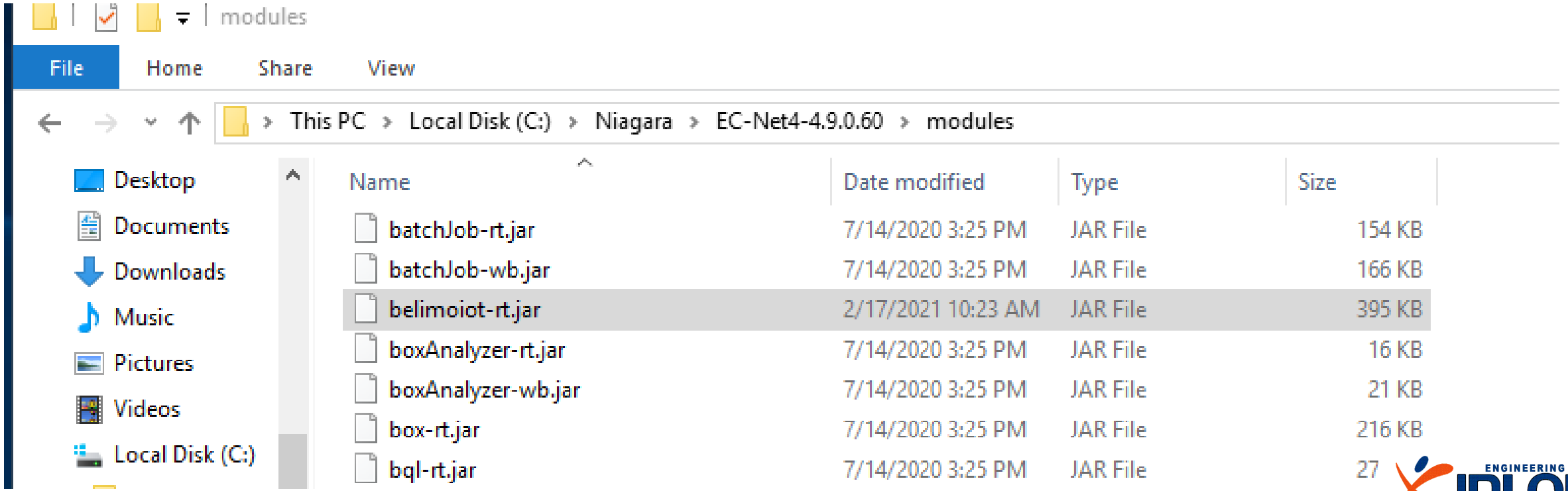
Copy into Workbench PC

When receiving updated or new module jar files, you have to copy them to your Workbench PC, as follows.

- Close the Workbench application.
- Copy directly into your !/modules directory. This makes the module(s) available in your Workbench environment, and also available to install in other remote platforms (when the installer runs, the module(s) are also copied into your software database, available for installation).

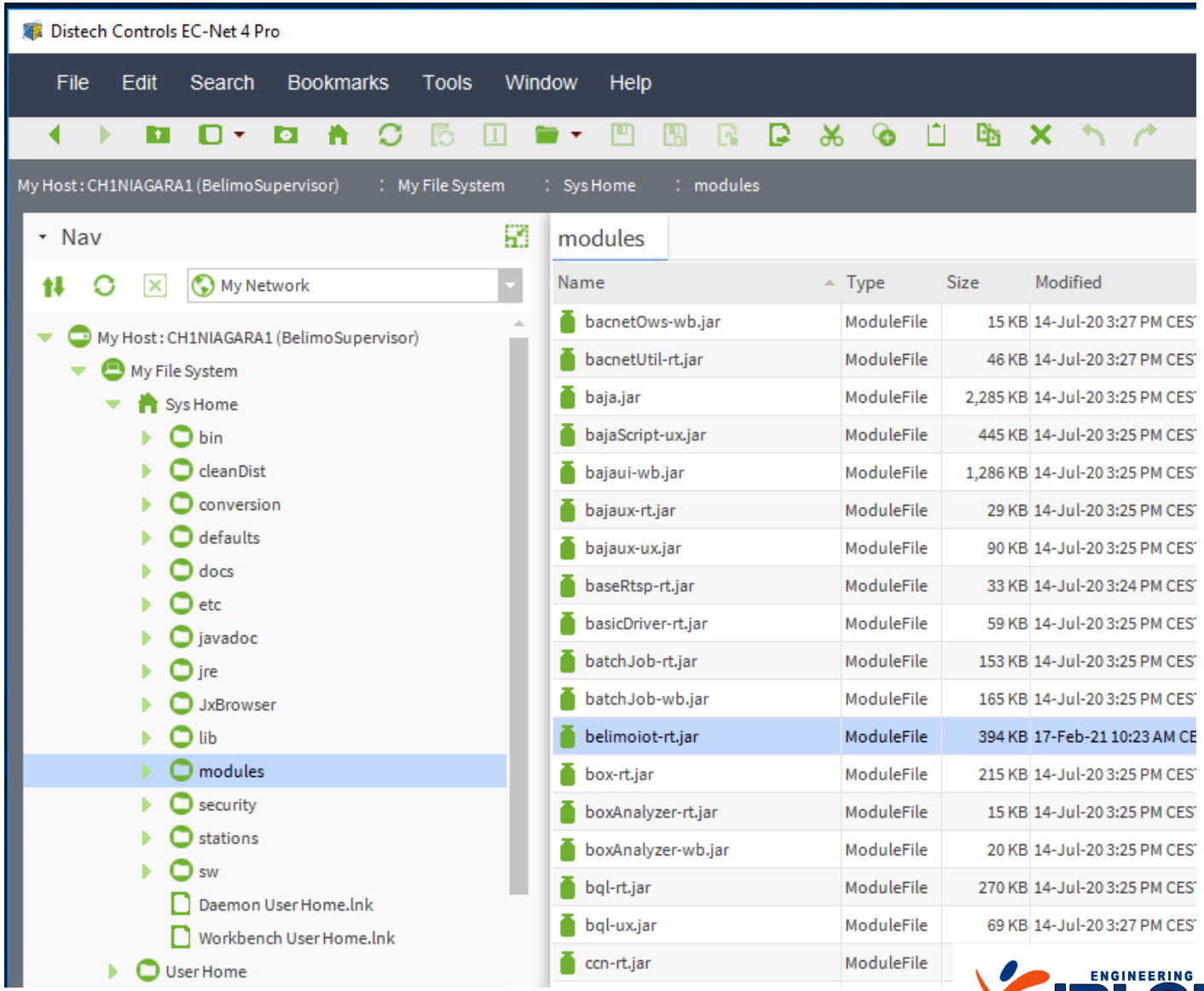
The Niagara modules folder

Take care to copy the module into the right current running version of Niagara platform.



Check the presence of module

Open the Workbench application and search for belimoiot-rt module into system module folder.



Module signing advice

- In Niagara 4.8 and later, there is added support for the signing and verification of third-party modules. Third-party module signing is still optional in most cases, but this will gradually shift to a requirement over the course of the next releases.
- In Niagara 4.8 and later, there are added Workbench tools to support module signing.
- The Jar Signer Tool is useful for non-developers or anyone using an unsigned legacy module. The Jar Signer allows you to “sign” an unsigned *.jar file using a code signing certificate.

Please you can read about module signing here:
https://docs.Niagara-community.com/bundle/ModuleSigning/page/ExampleConcept-41FE0D3F.html

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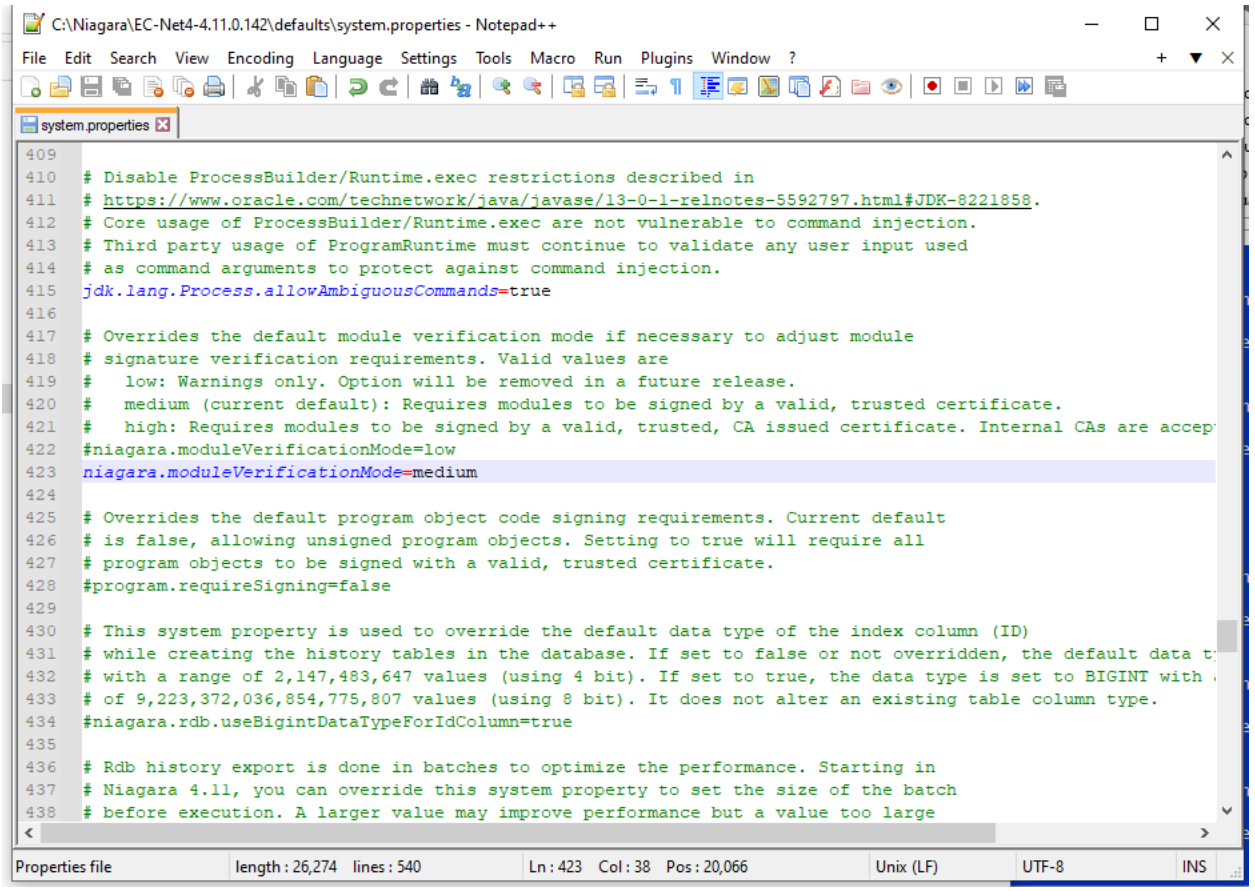
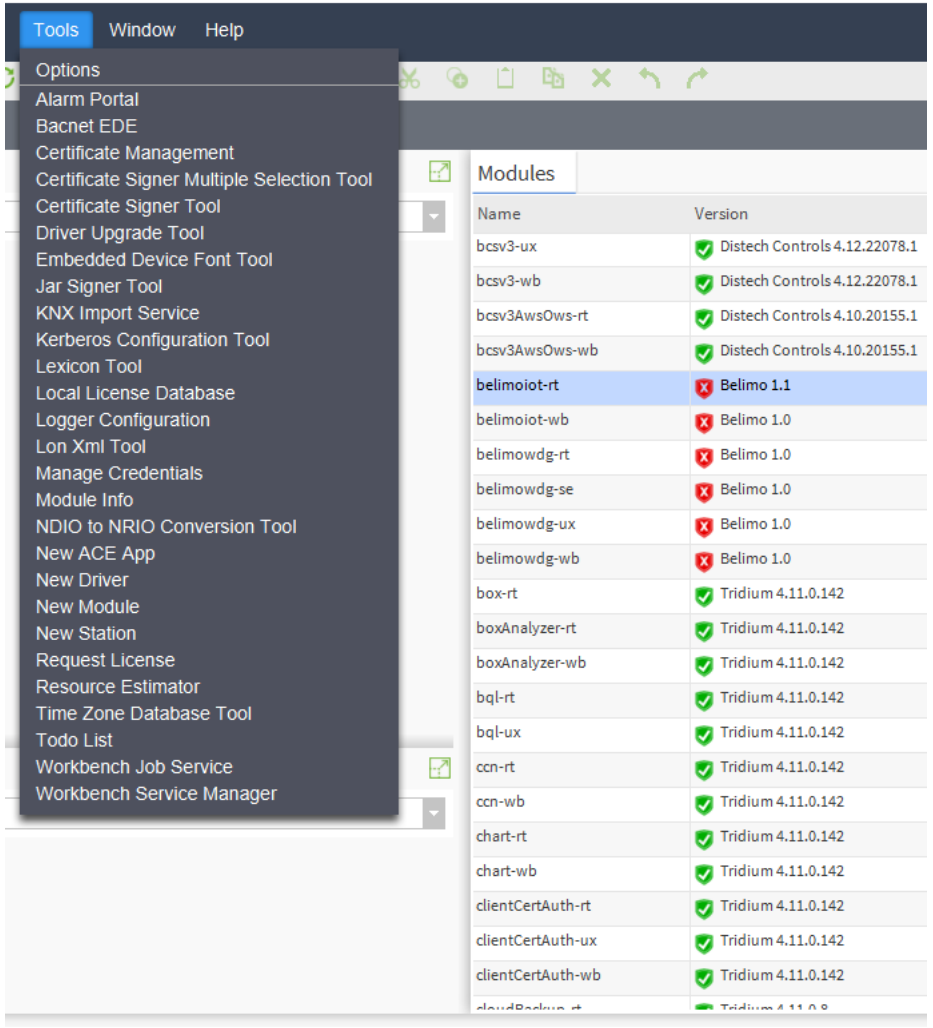
Check Workbench module signing level

Open the system.properties file of Niagara current version and check what module verification mode is set. Low option is used for development and debugging purposes. Medium level requires external module to be signed.



Check module sign

Open the module info tool and according to sign status of belimoiot-rt perform the next operations.



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Module sign

If red sign is displayed, module cannot be used. The sign operation requires the to import the certificate locally. Ask for “.pem” file to INLON support.

There are errors that are not acceptable for the current module verification mode.

There are warnings, but they are acceptable for the current module verification mode.

Indicates that the module is signed with a Certificate Authority (CA).

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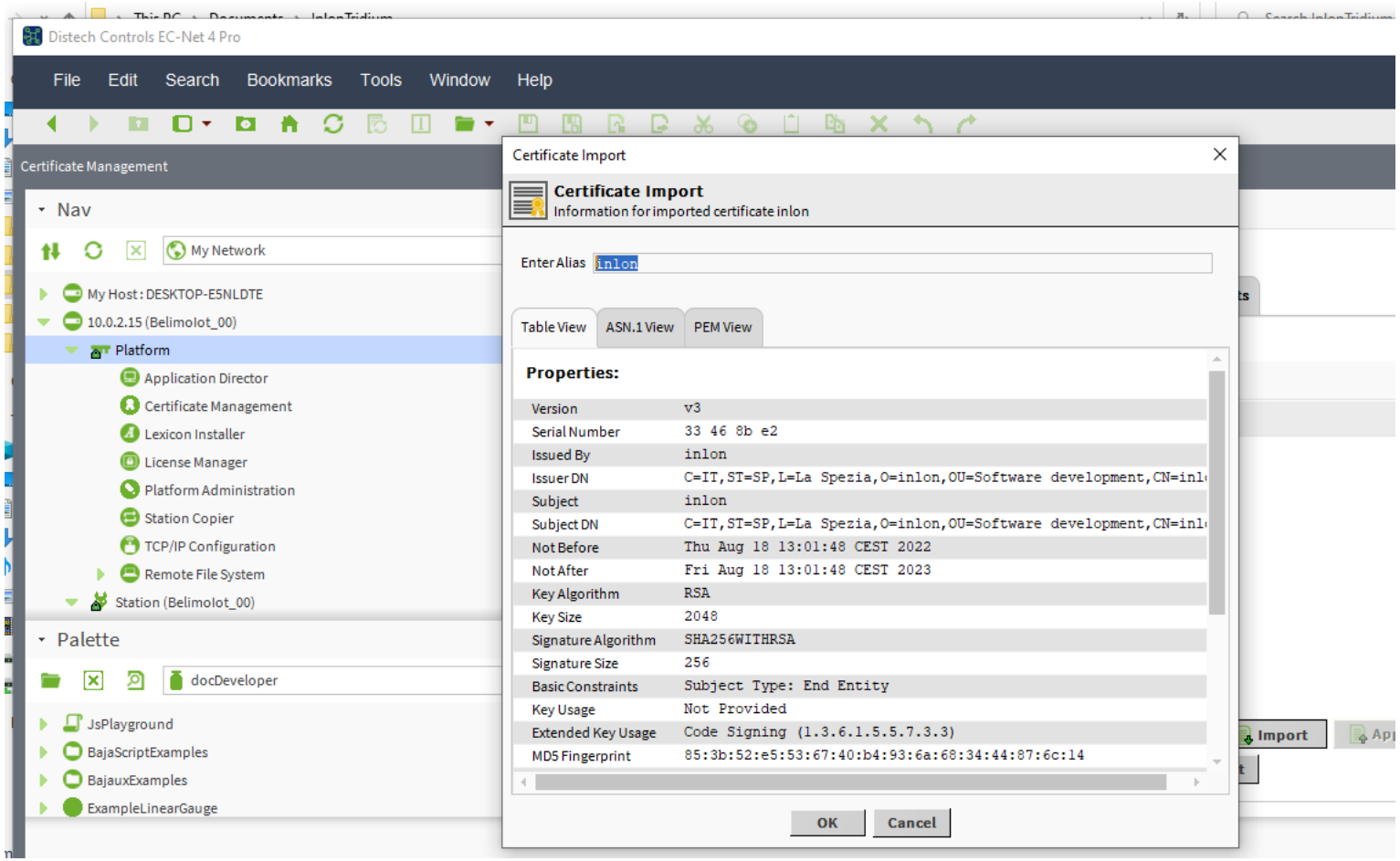
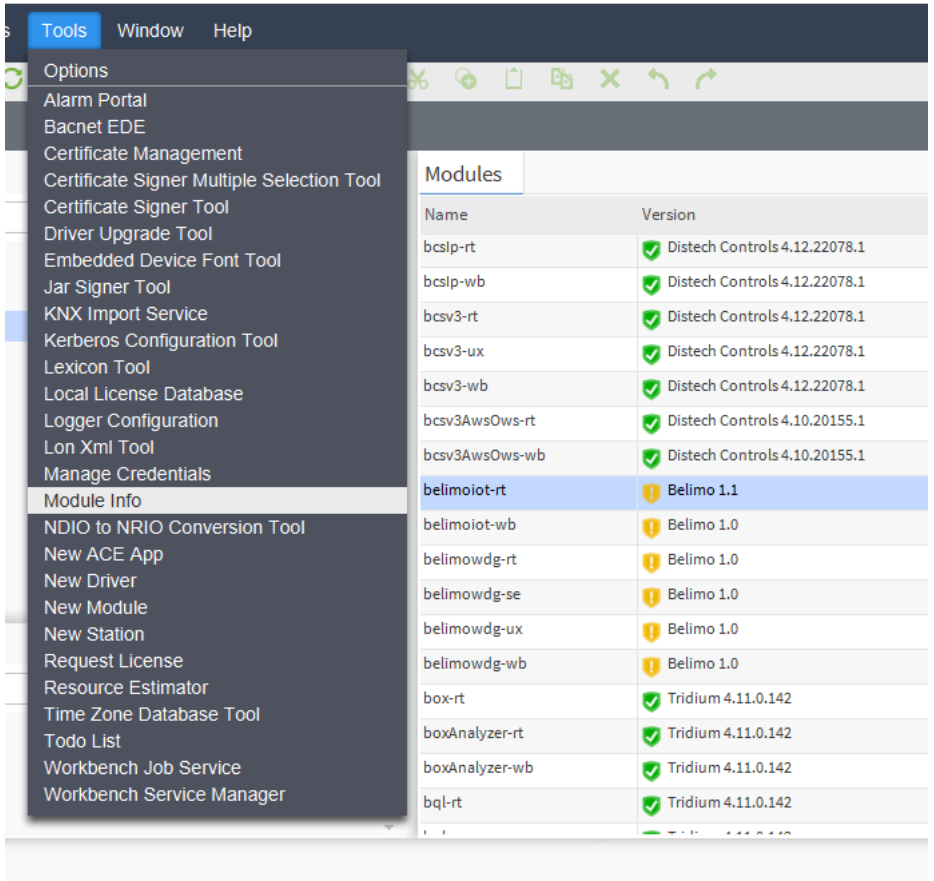
Import certificate to Workbench

Confirm the certificate data clicking ok button.



Check module sign again

Open the module info tool and now the belimoiot-rt is signed and can be used.



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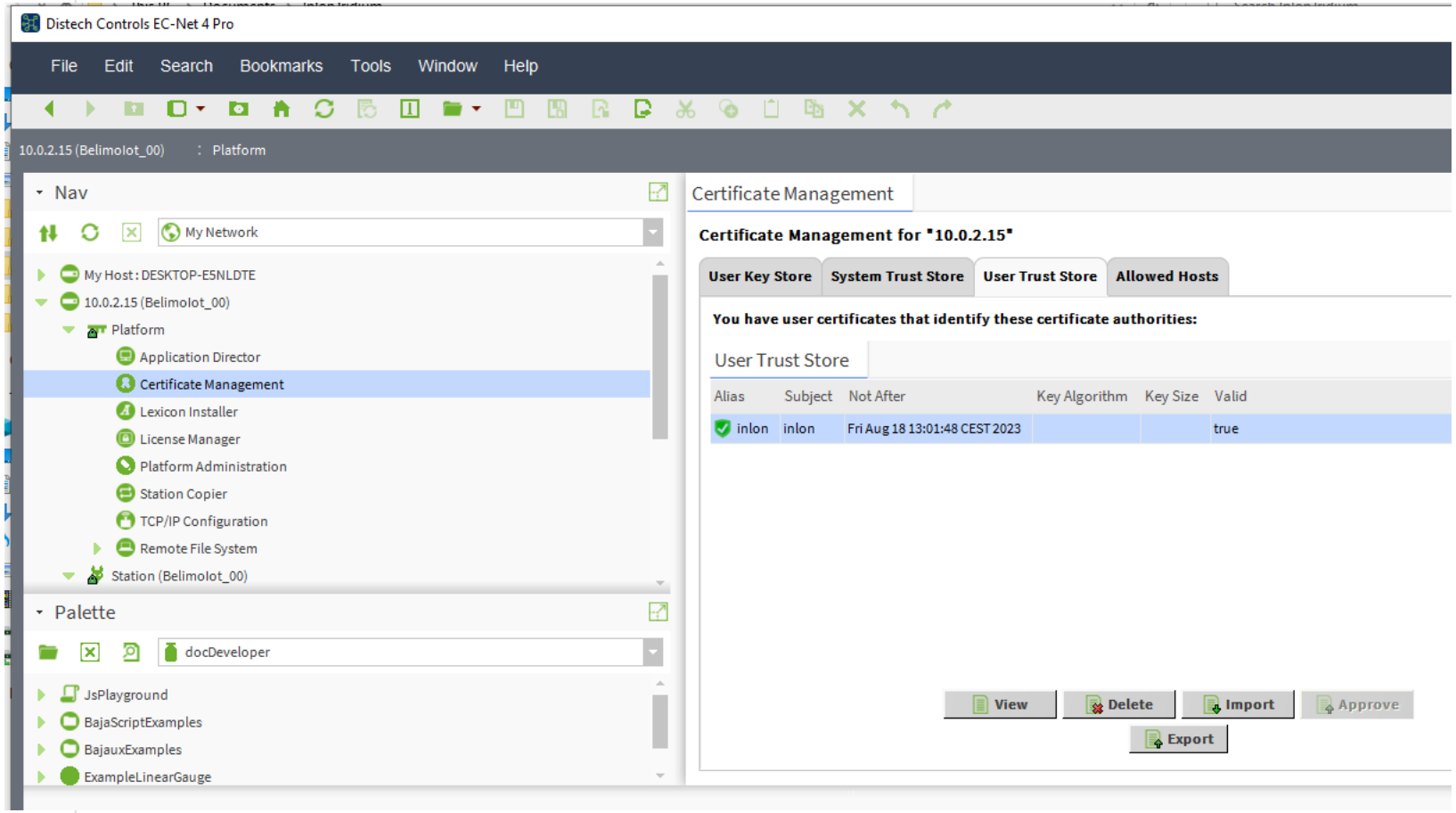
Import certificate to Platform

The certificate should be installed on stations too. Select the Platform station Certificate Management and perform same operation like for workbench. The Niagara Help describes deeply all the operations.



Using the module

Next steps require
a running station

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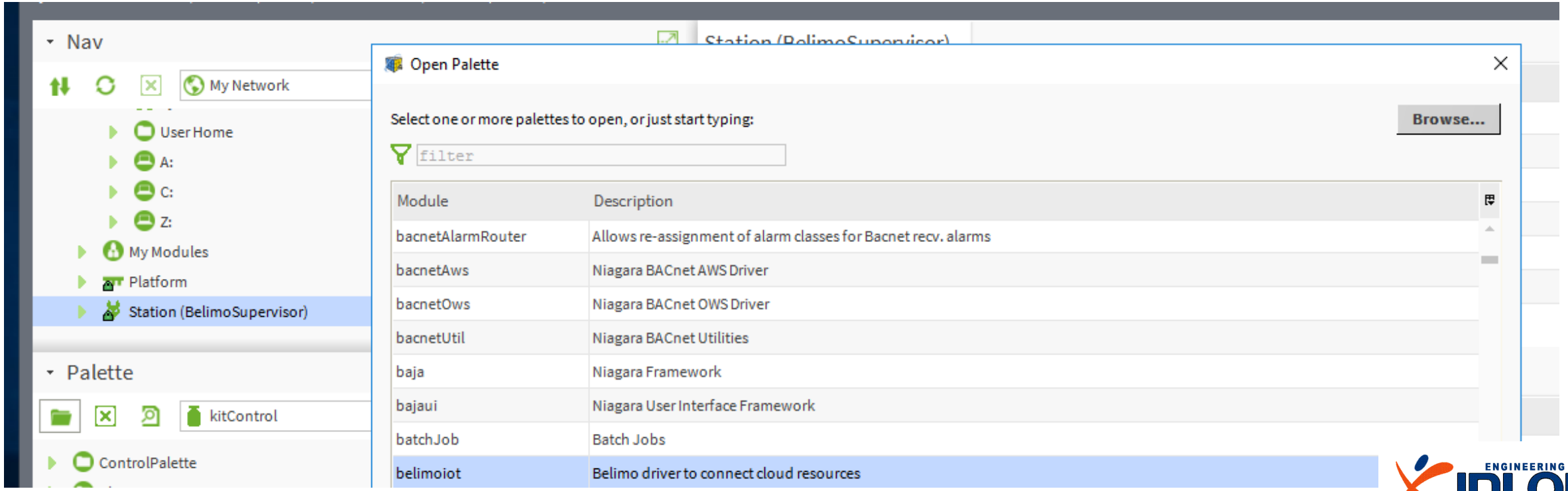
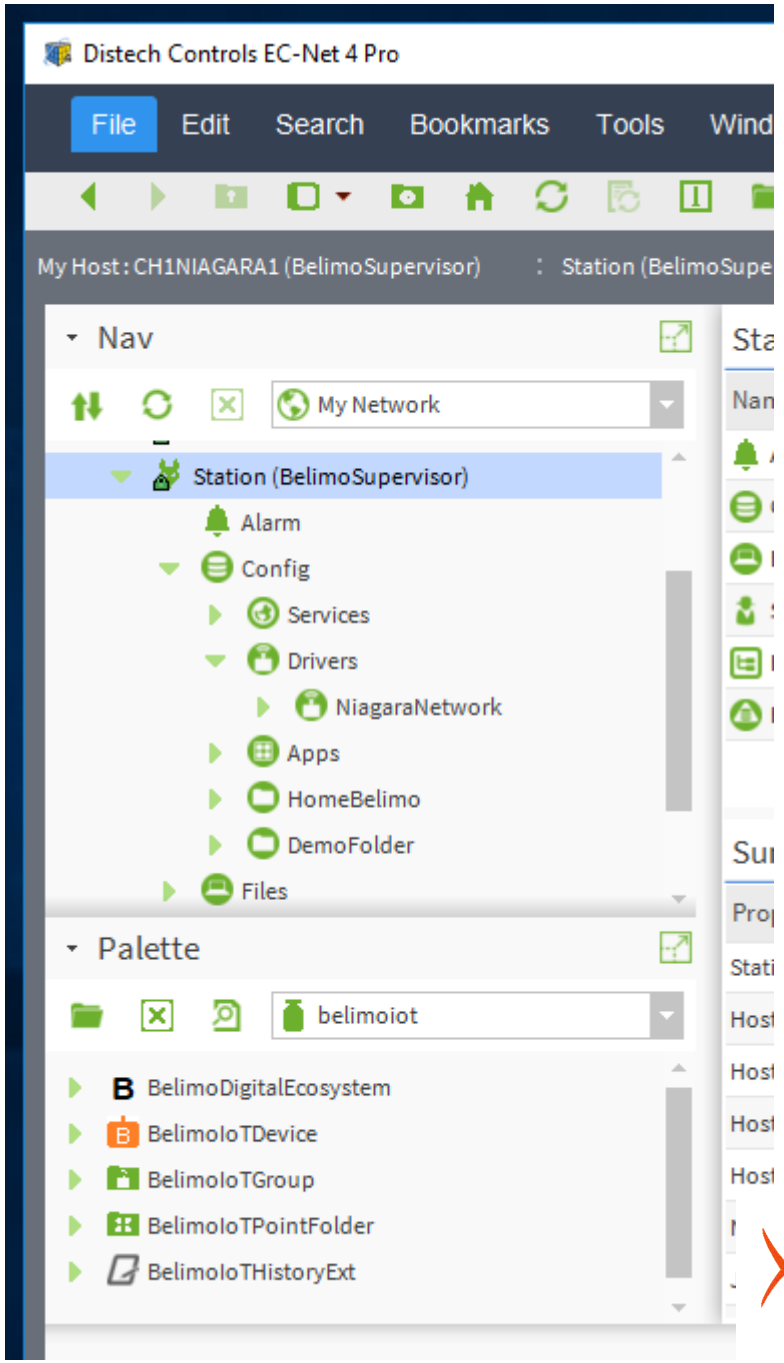
Load the palette

Open the palette view and select the belimoiot one.



The Belimo palette

This is the palette of the Belimo Digital Ecosystem.



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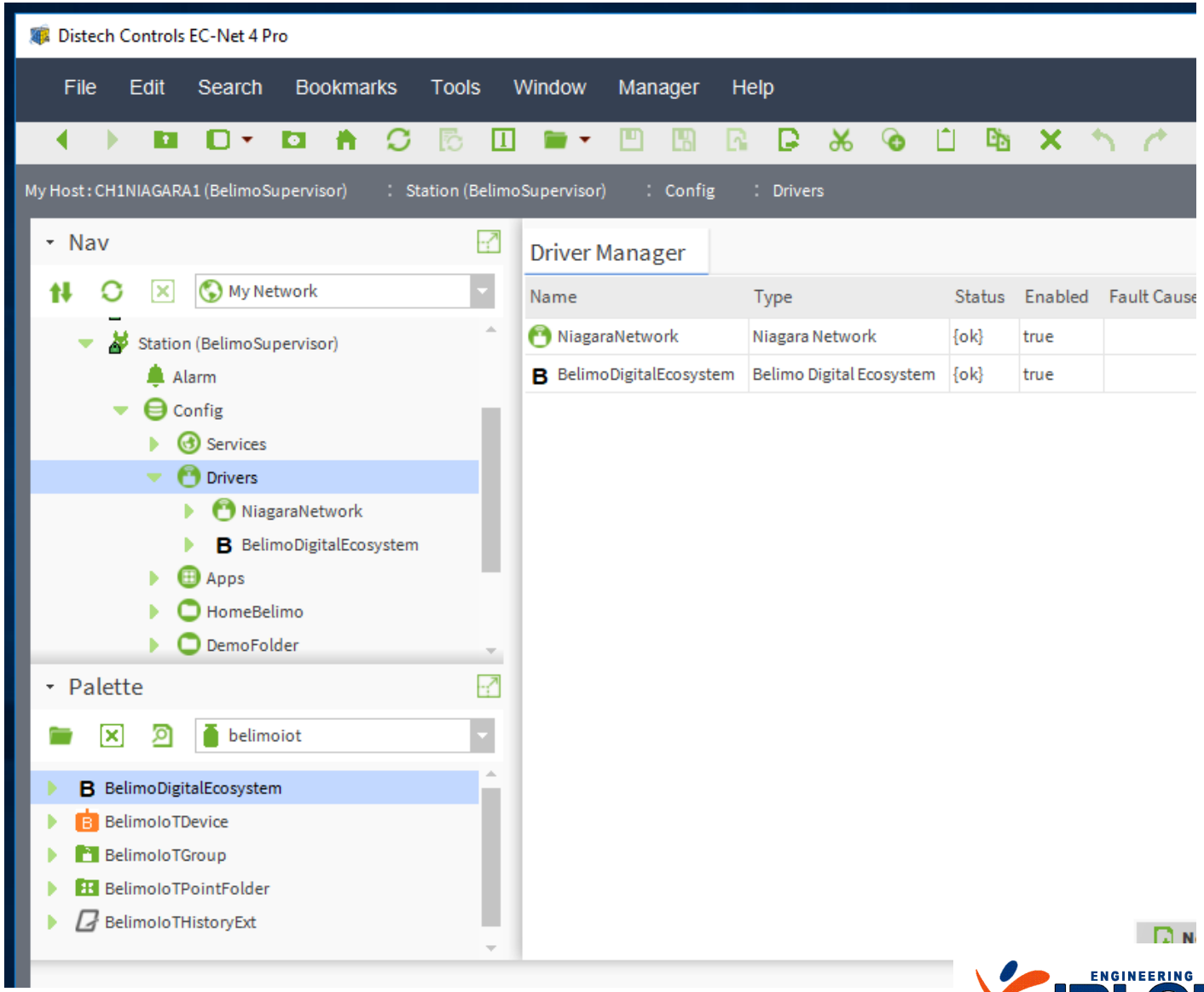
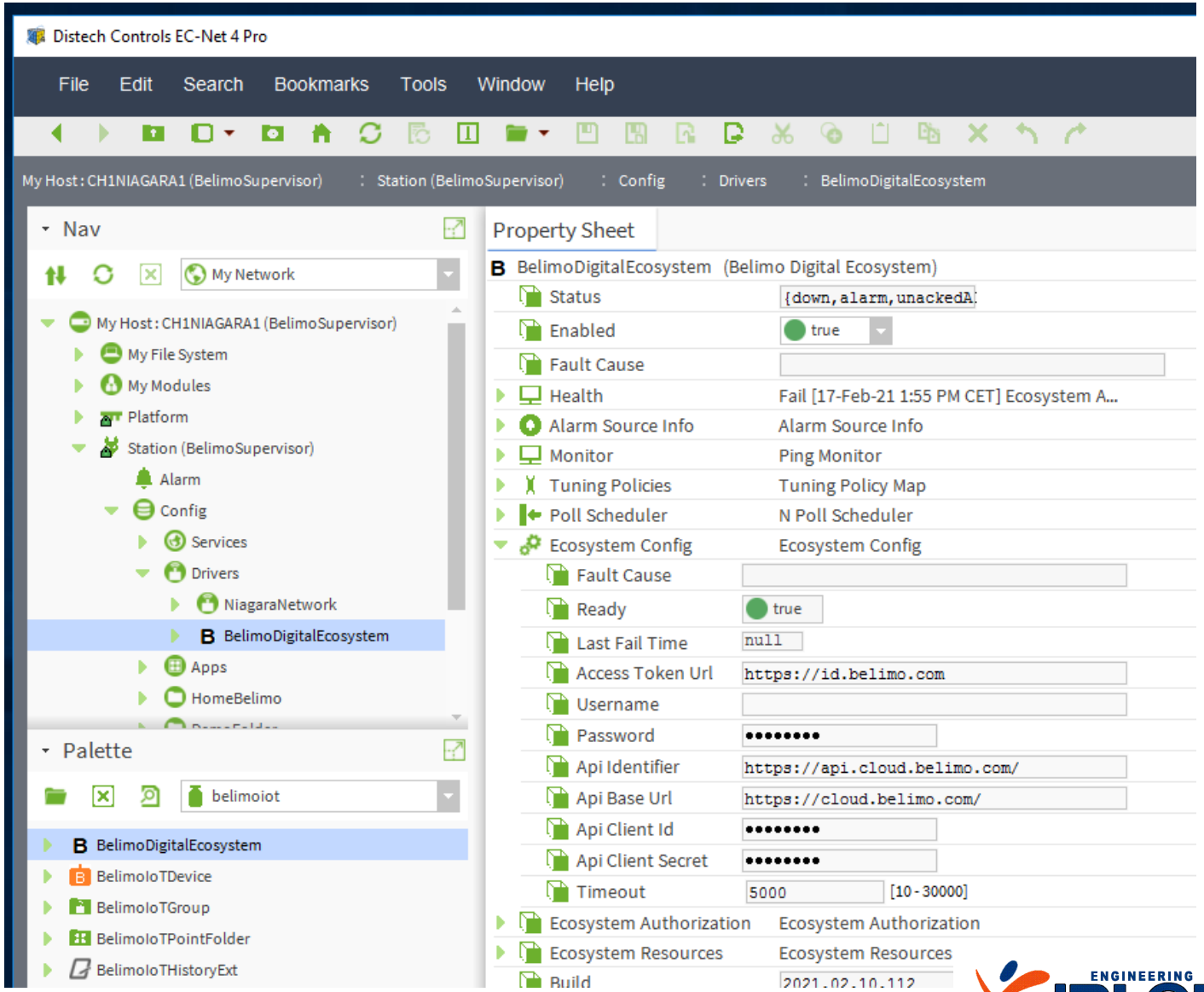
Add the driver to network

- Open the running station
- Navigate to Driver Manager
- Drop the ‘BelimoDigitalEcosystem’ object to Driver Manager



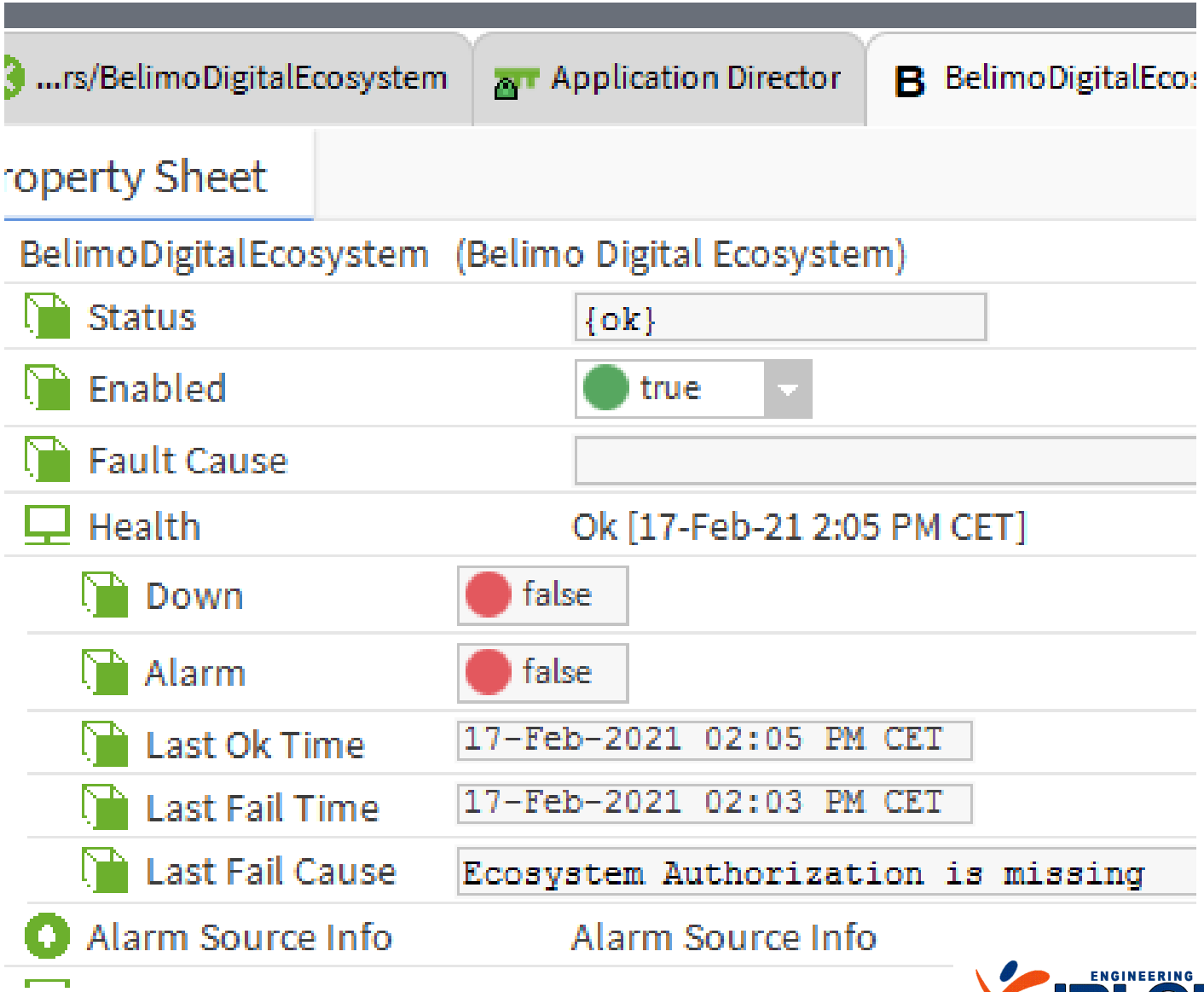
Configuration

- Select the network driver just added
- Open an AX Property Sheet View
- The status is not ‘ok’ as far as connection to Belimo cloud fails
- Expand the node ‘Ecosystem Config’
- Input Username and password of you Belimo account.
- Input the Cloud API Client ID and Secret you received on the Belimo Developer Space (https://www.belimo.com/iot/developers)
- Restart the station



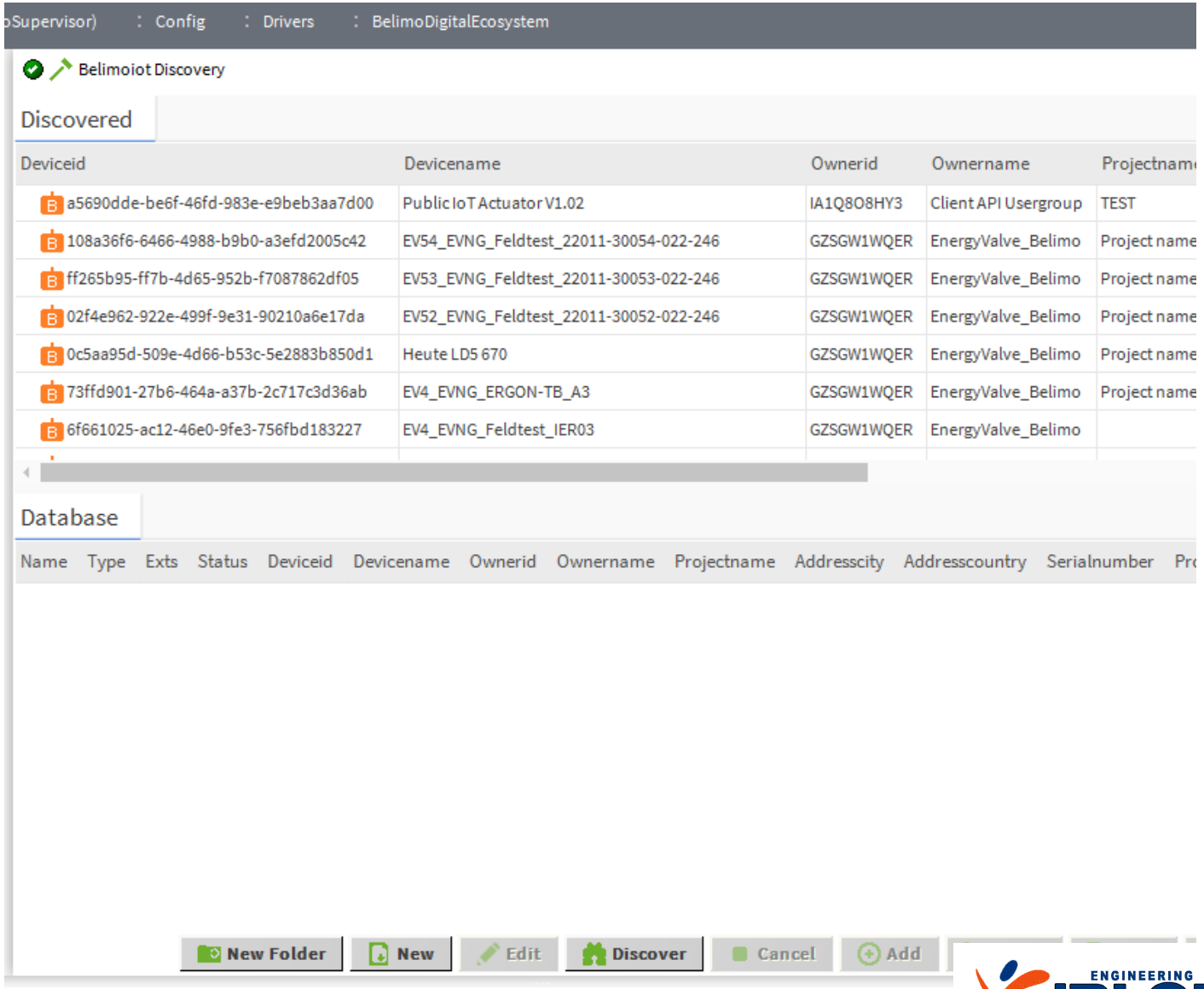
Connection established

Status ‘ok’ means connection to the Belimo Digital Ecosystem has been established successfully. Health indicator can produce more details about connection status.



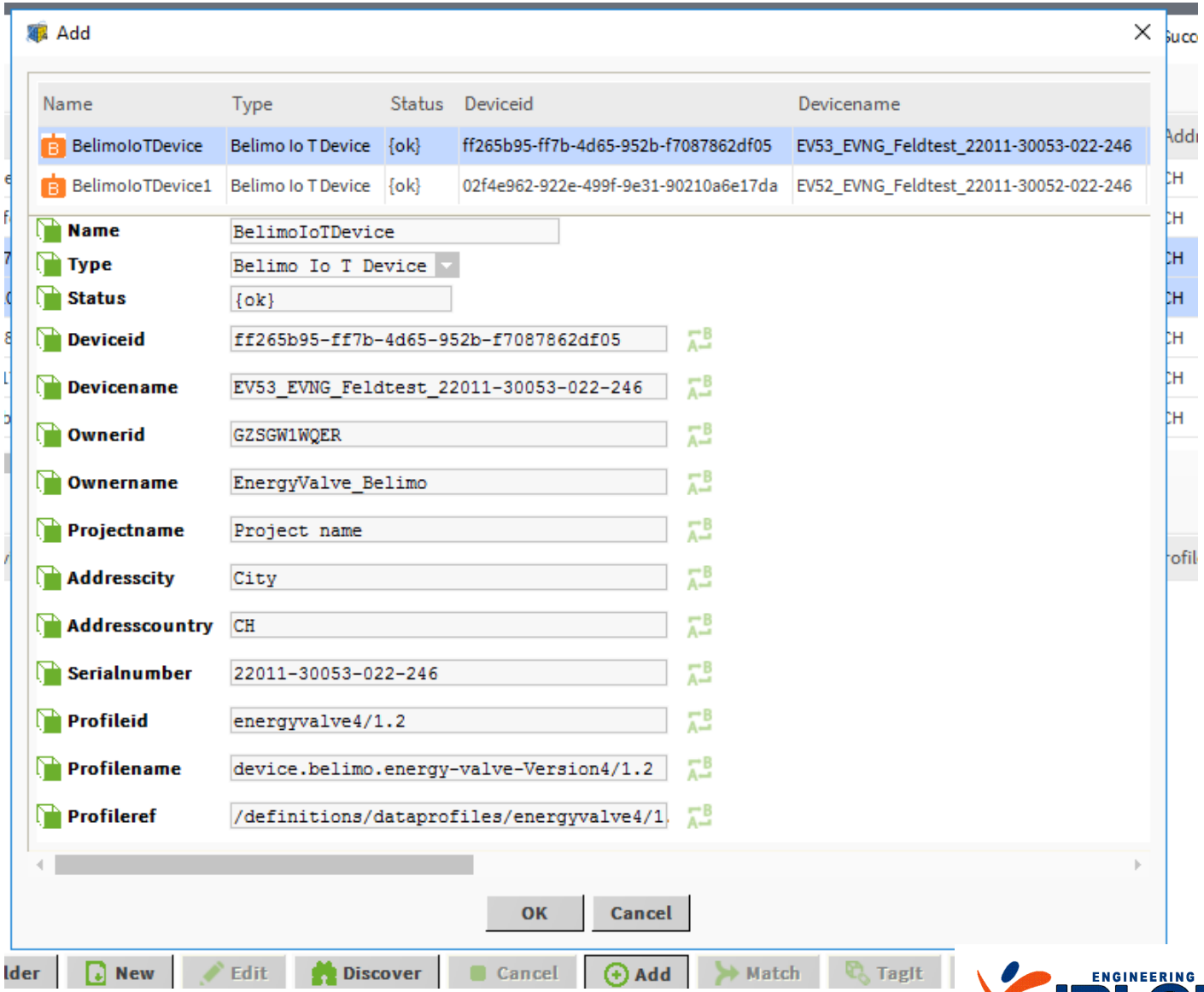
Device discovery

- Double click on the BelimoDigitalEcosystem network driver.
- The Belimoiot Device Manager view is showed
- Press the Discover button
- The list of devices is going to be updated according the devices associated to your Belimo account.



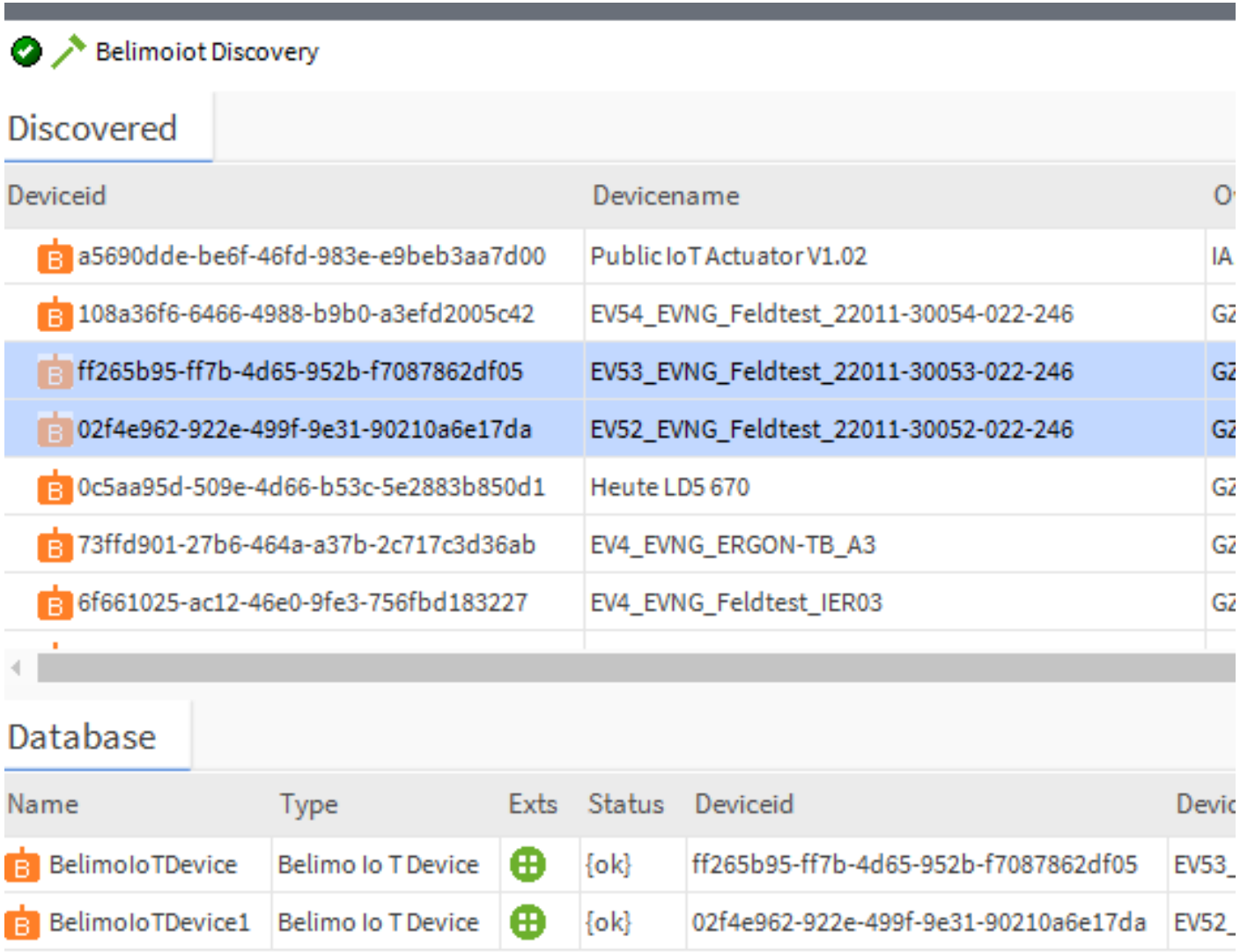
Device add

- Select any device you would like to add then press button Add.



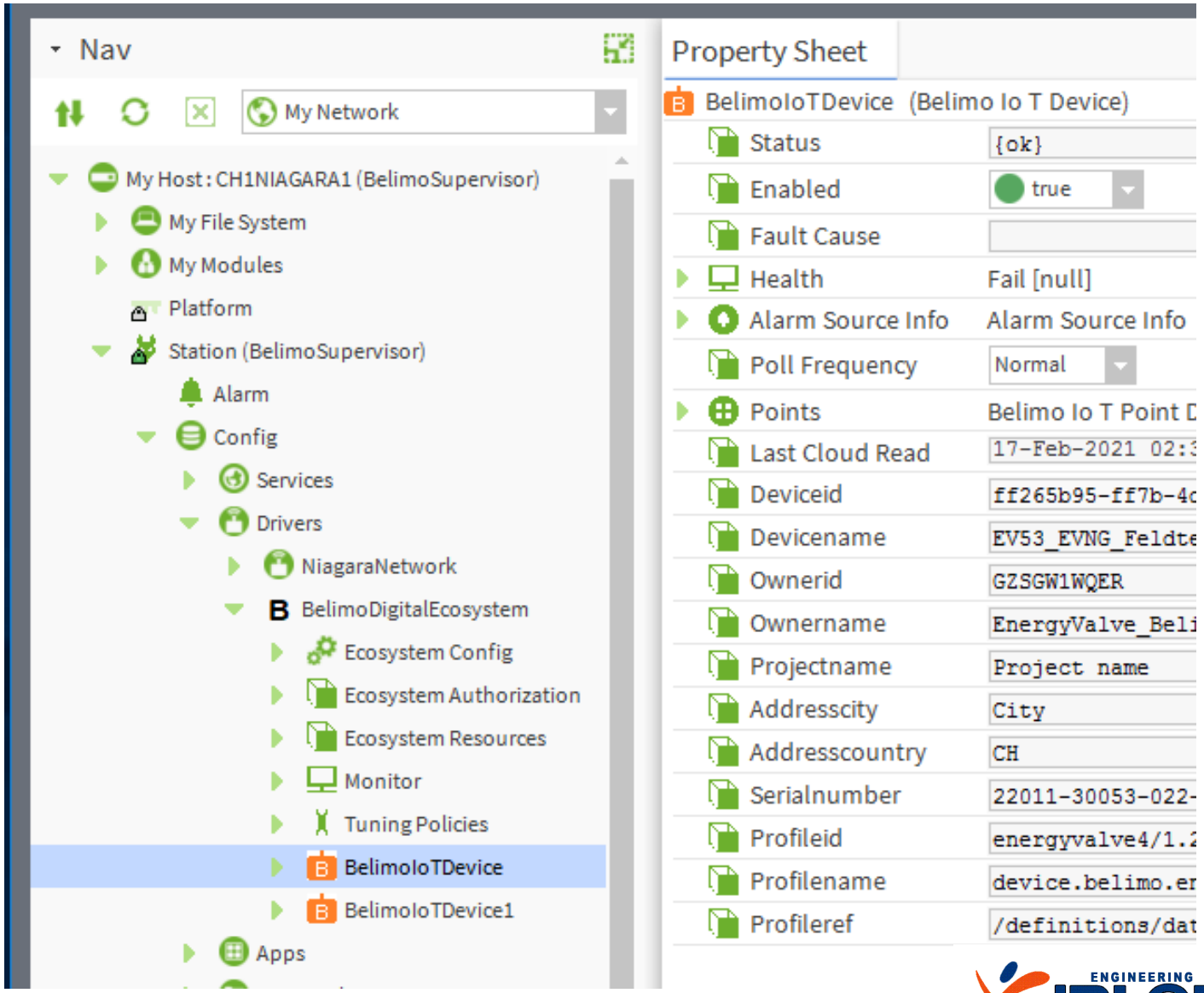
Device add

- Added devices are visible on lower list.



Device details

- Go to Nav Tree and double click one device
- A list of information is displayed.
- Status should be ‘ok’
- Double click on the Points folder to go to Point Manager.



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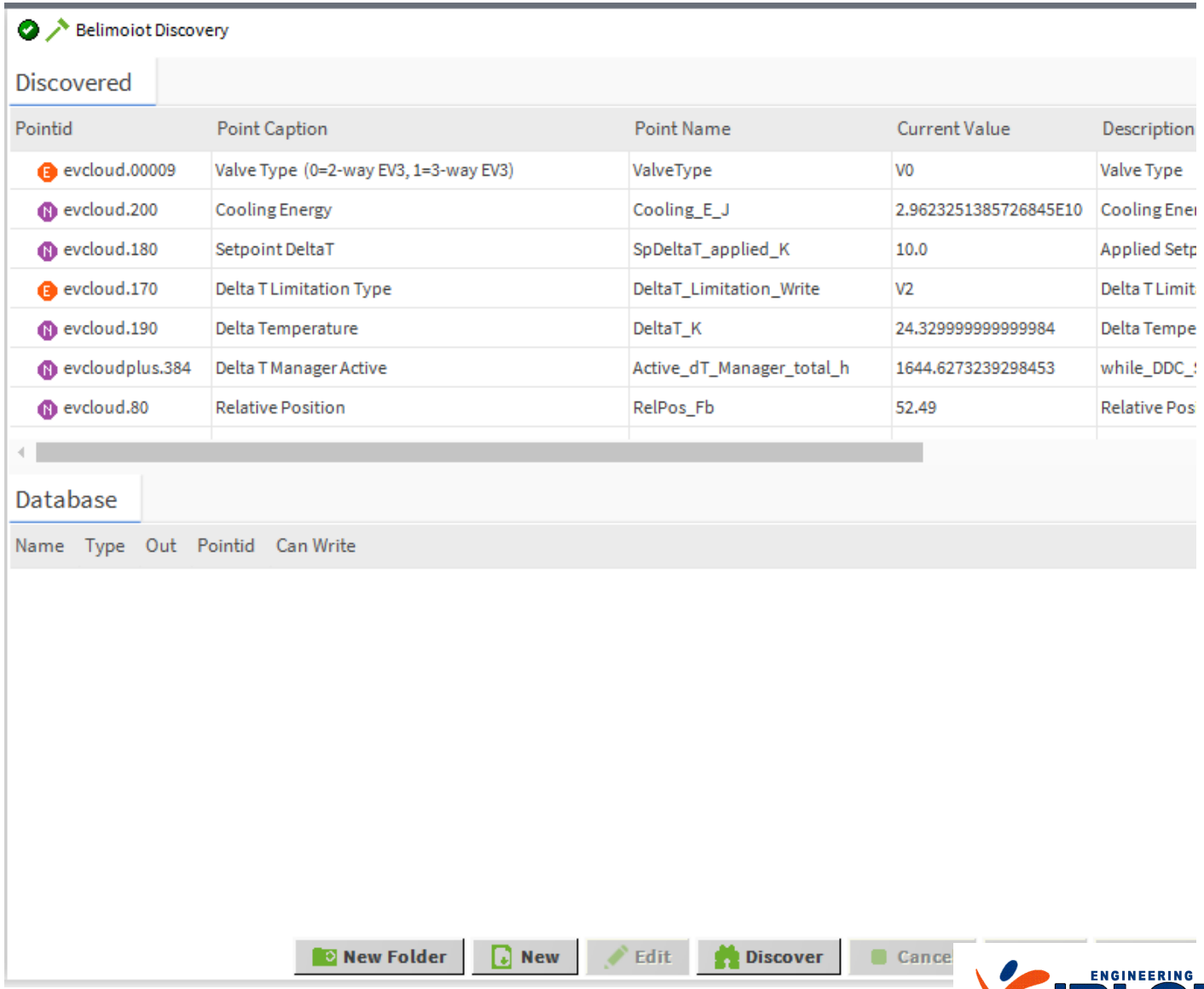
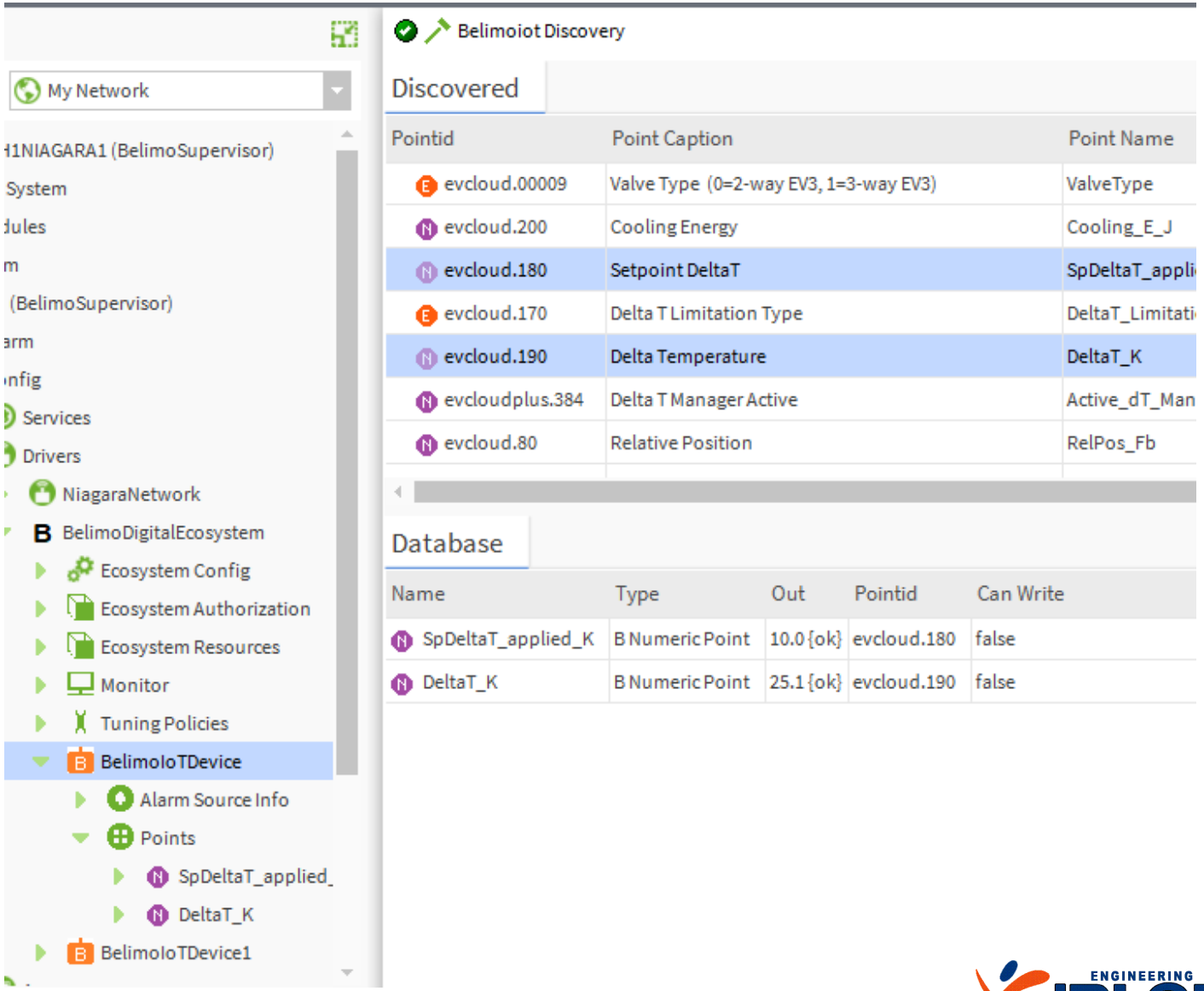
Data Points selection

- When the Point Manager view of a selected device is showed you can press the Discovery button.
- A list of available data points is filled.
- Select the points you would like using and press Add.



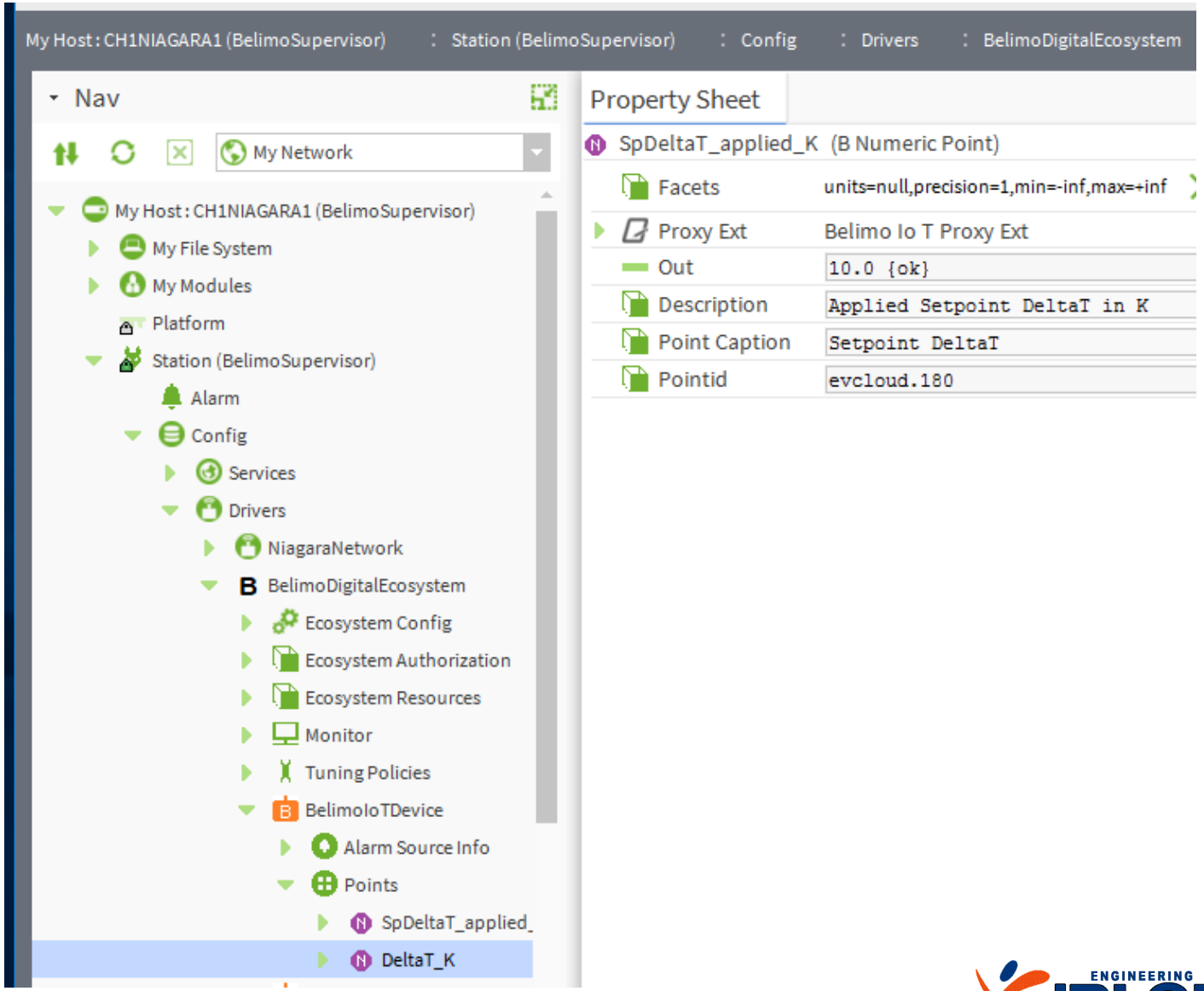
Data Points added

- Added points are visible on Nav Tree too.



Data Point details

- Double click on added data point and a details view is showed.
- The current value is available too.



Binding

Next steps show how to bind point value to local variables

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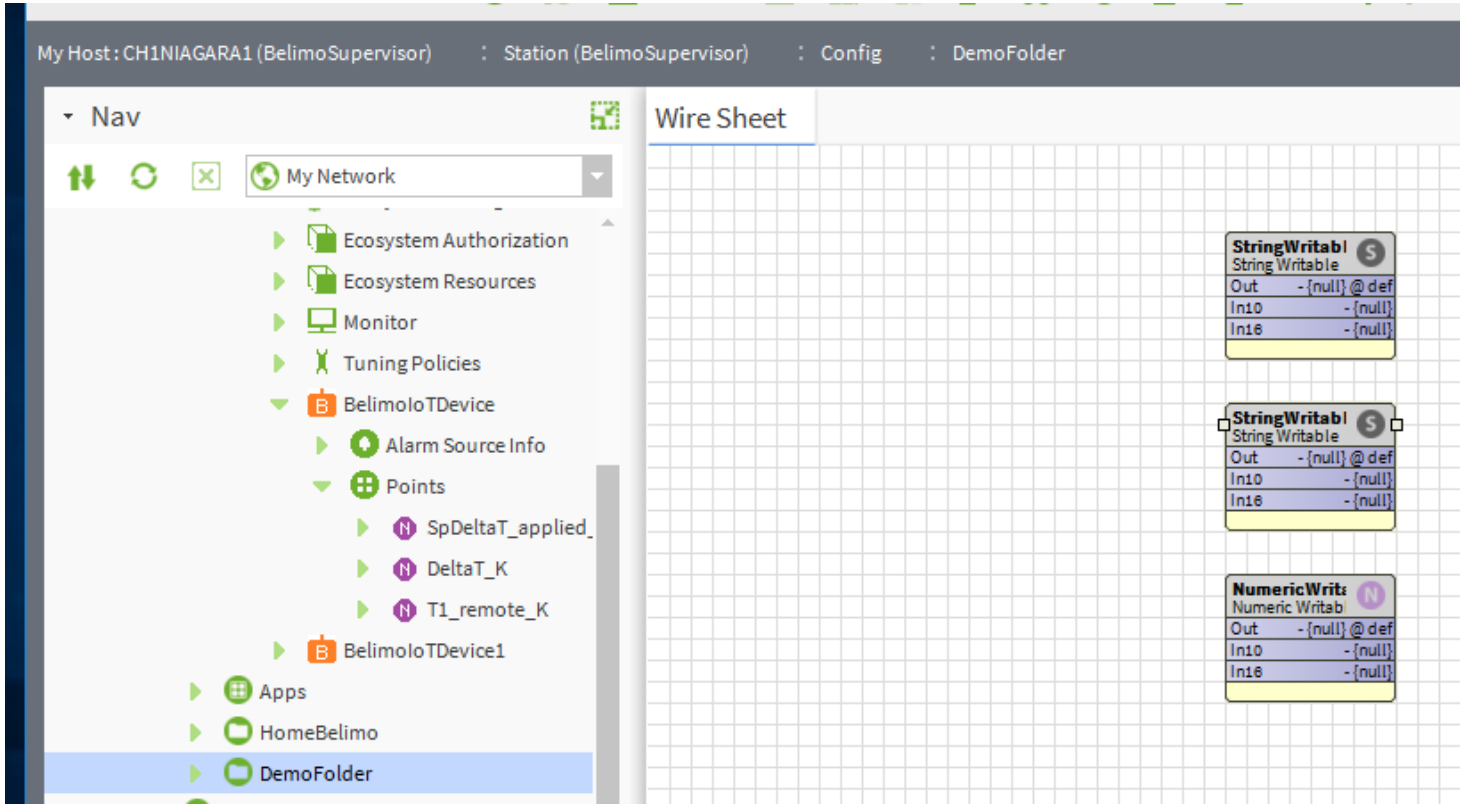
Demo folder sheet

- Create a folder, here for sample purposes is named ‘DemoFolder’.
- Open the Sheet view
- Add on the sheet two string writable object
- Add on the sheet on numeric writable object



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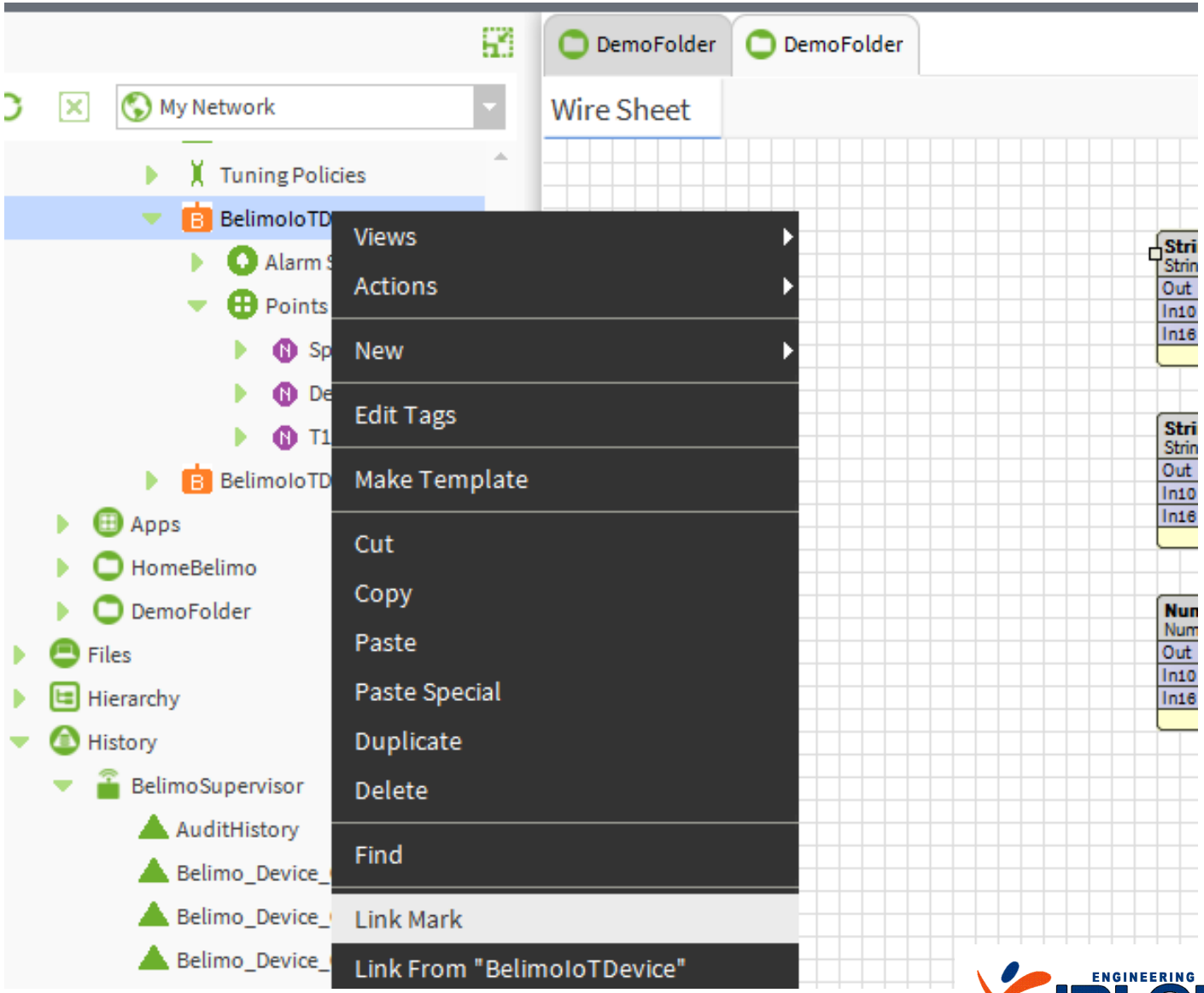
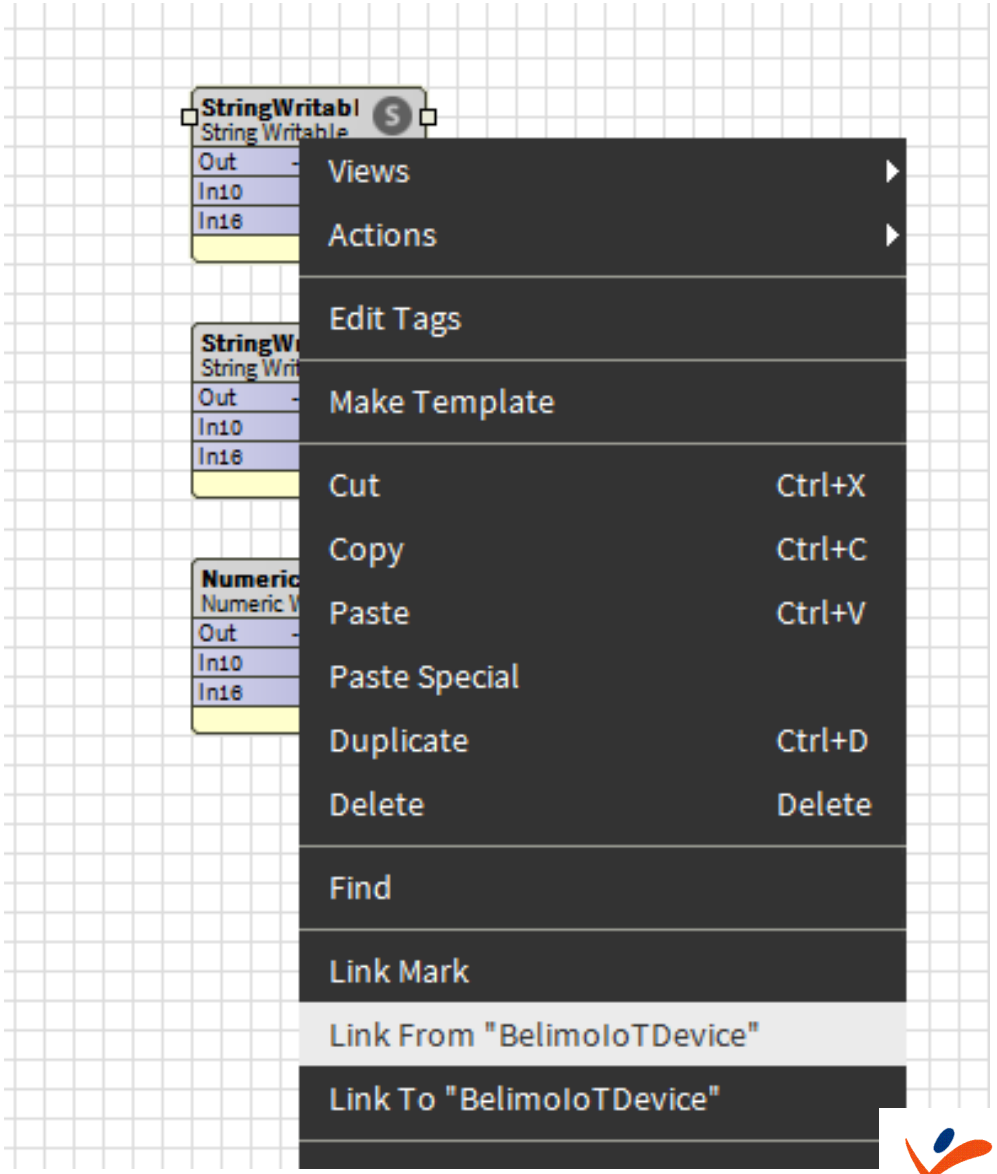
Bind from device

- Select the device and perform Link mark



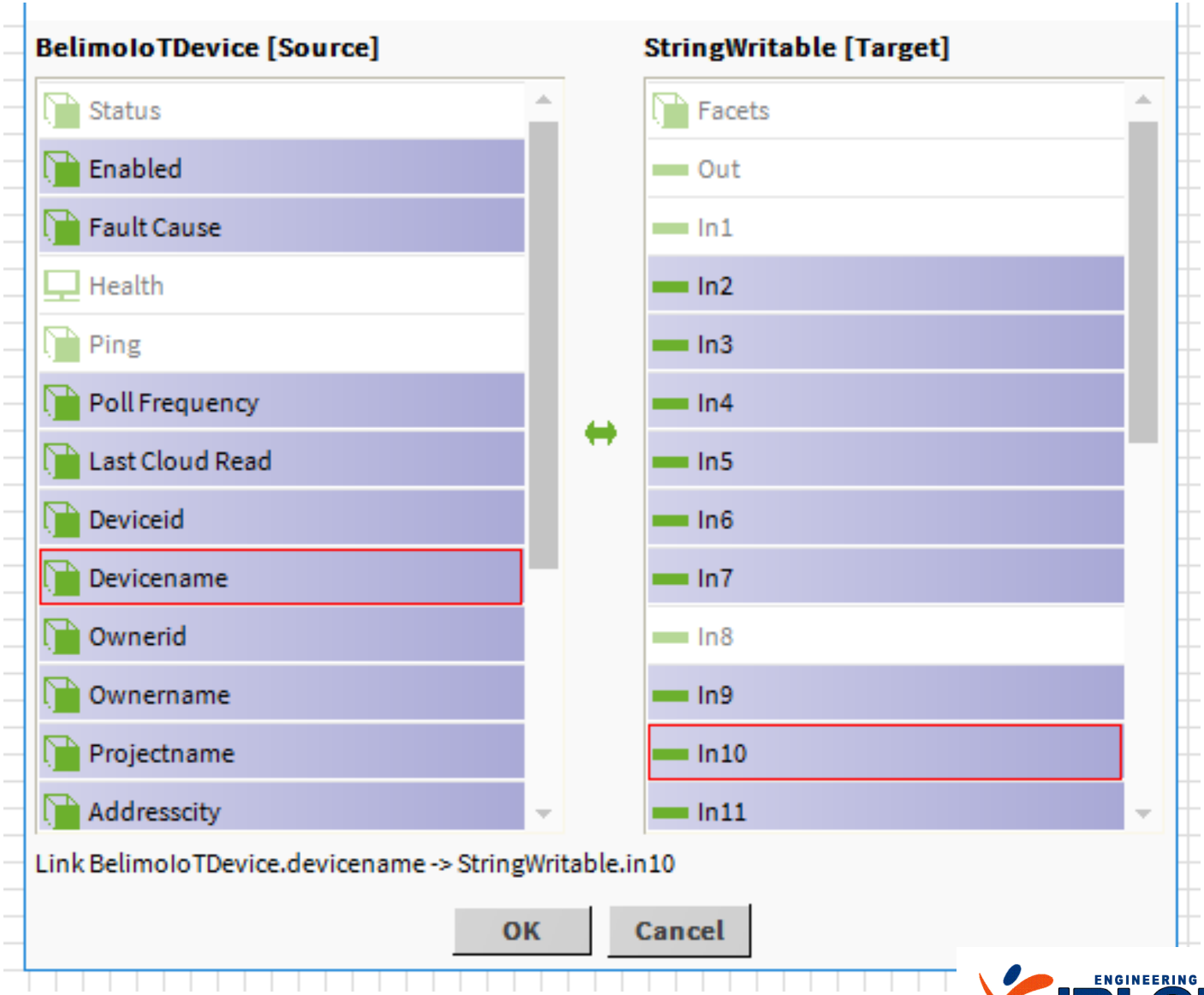
Bind from device

- Select first string writable object
- Perform a Link from “BelimoIotDevice”



Bind from device

- Select source and target of binding as in the example



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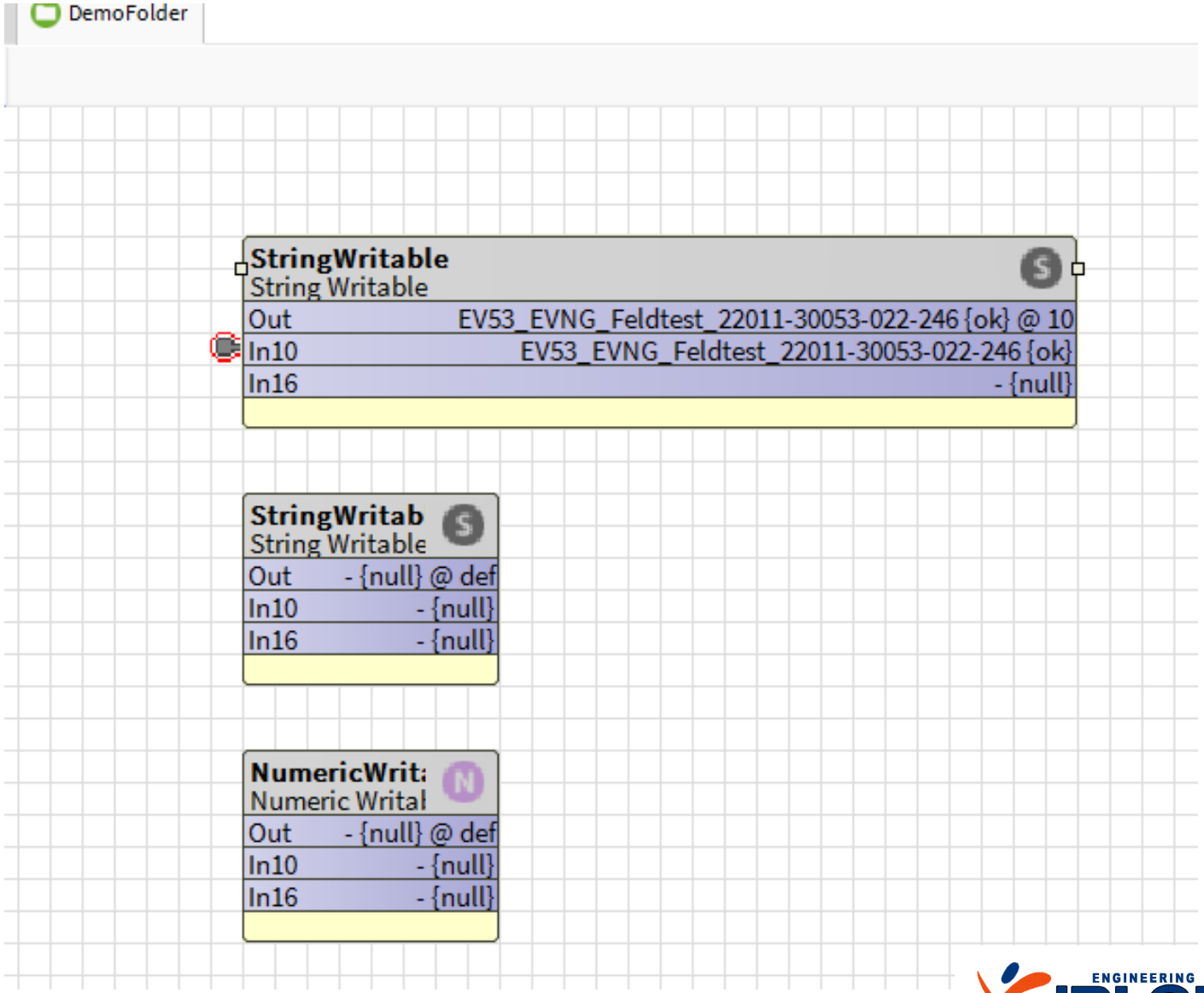
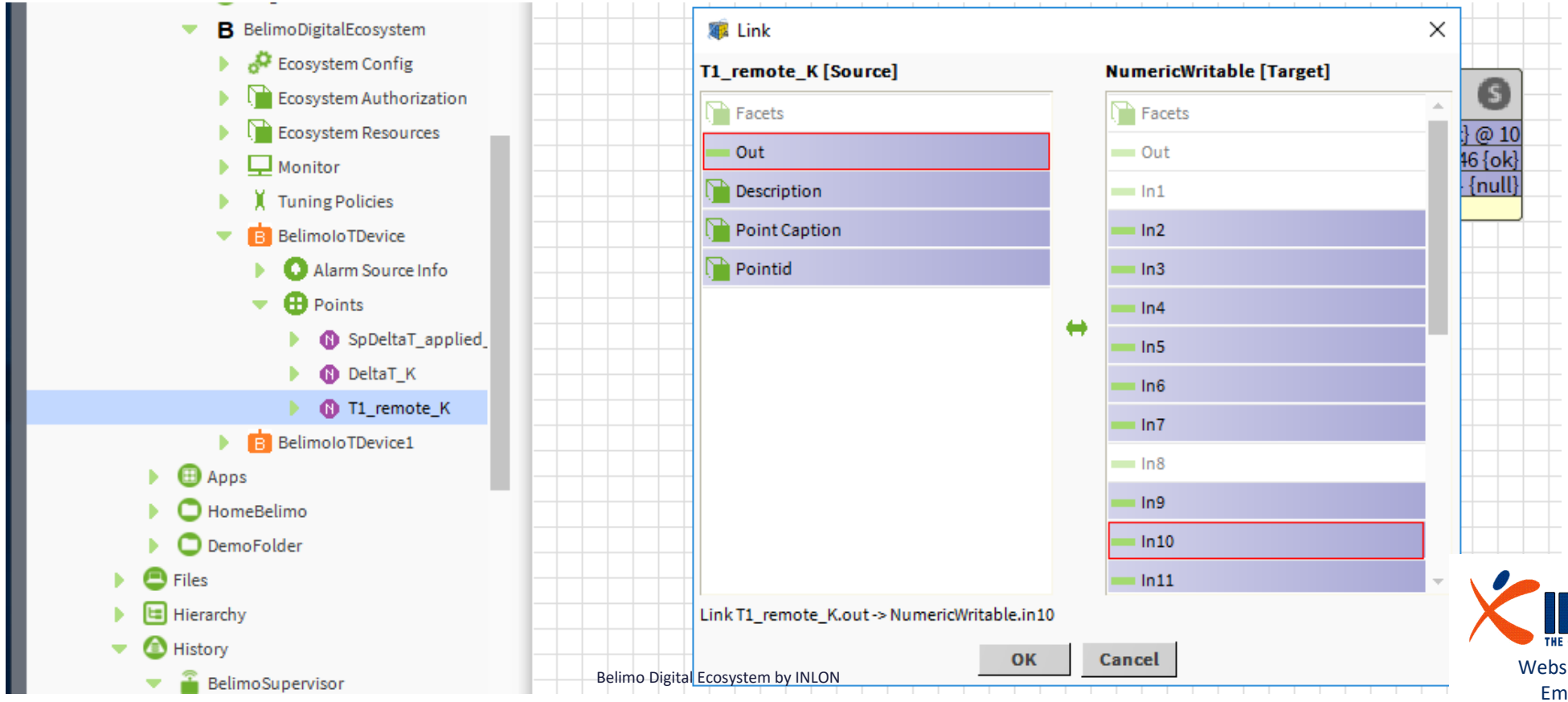
Devicename bind

- Now device name is available as variable



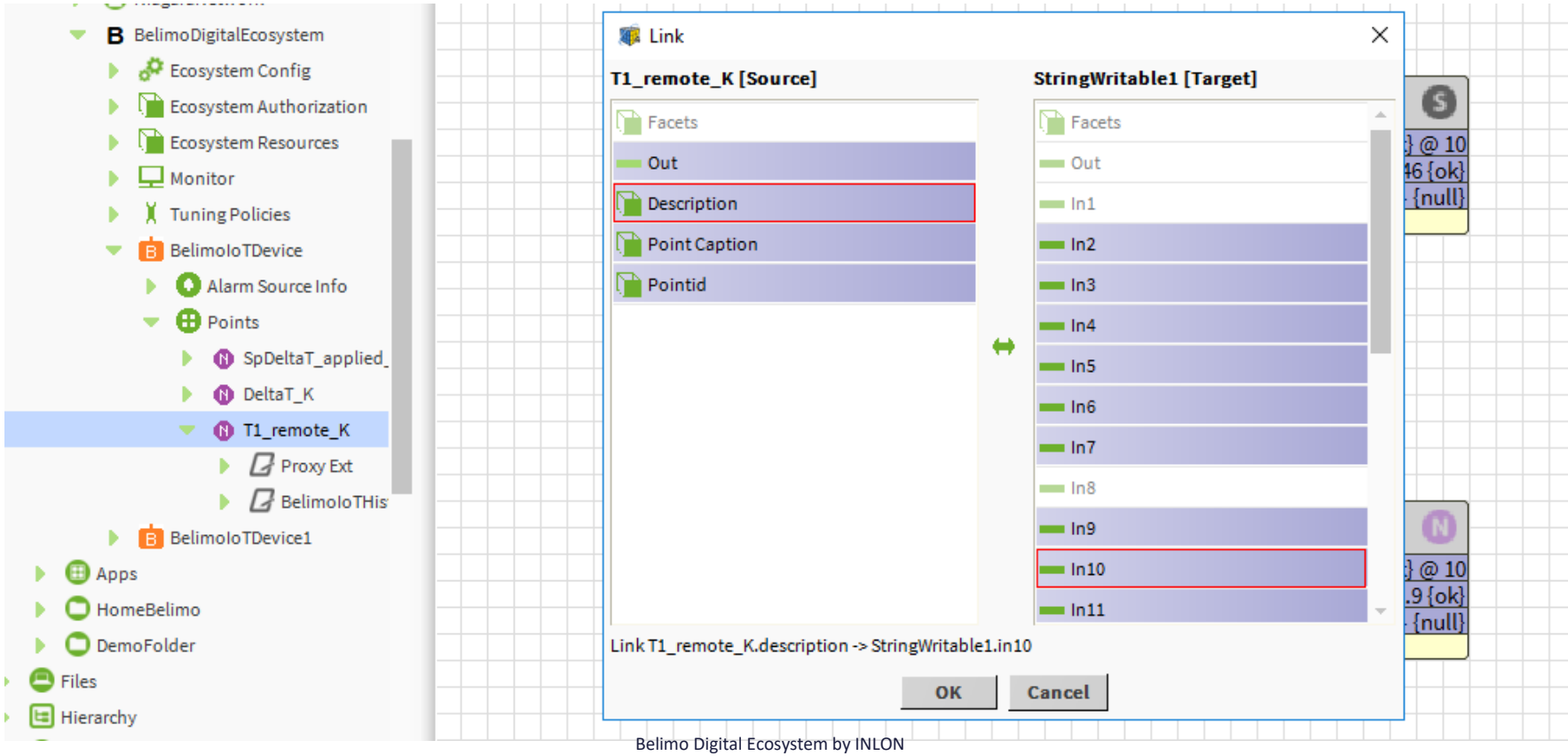
Data Point value

- Perform the same operation marking for link a point value out



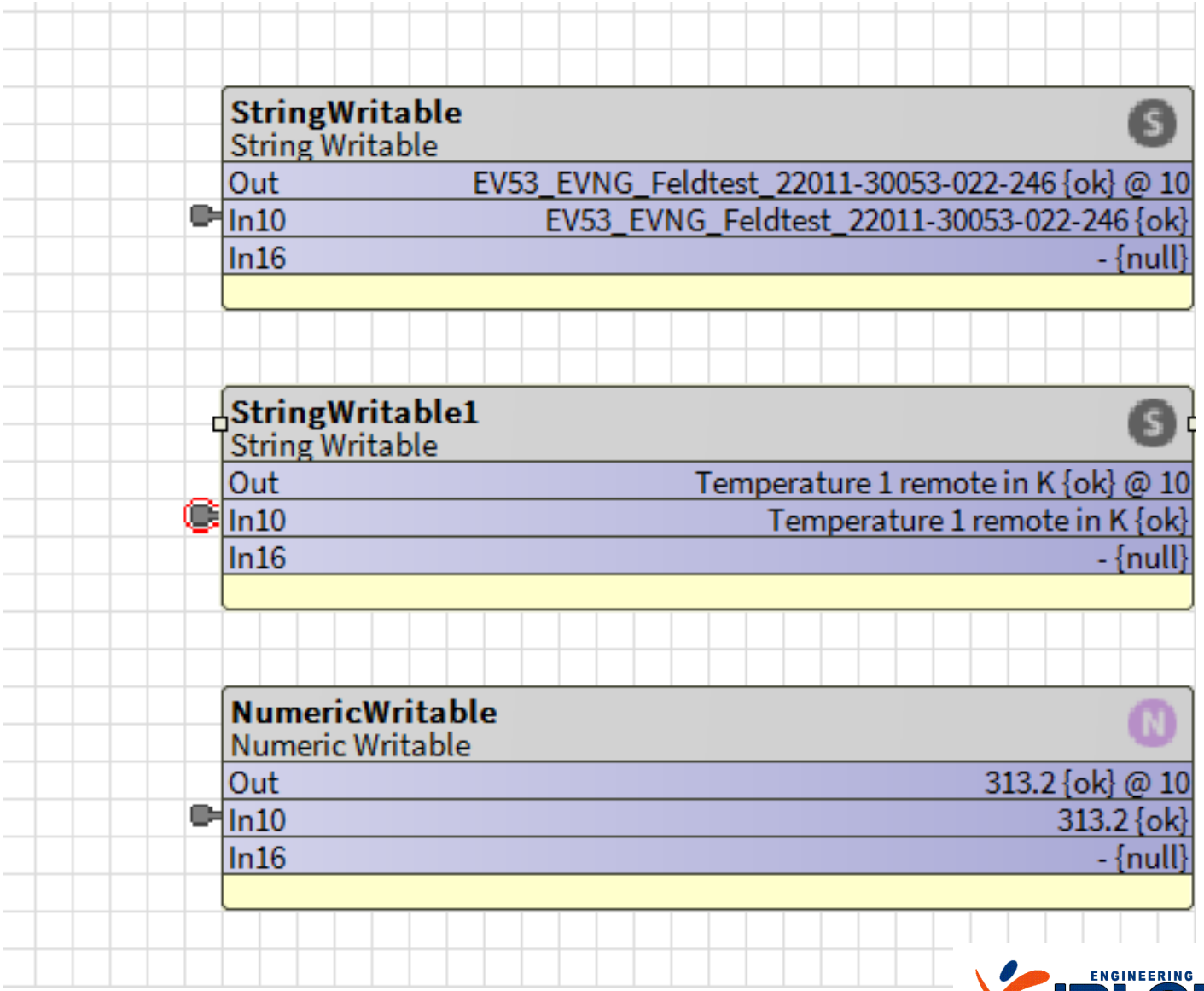
Data Point description

- Perform the same operation marking for link a point description



Variable bind

- Values and point information can be used to design your own pages



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History

Next steps show how to get one point history data from cloud

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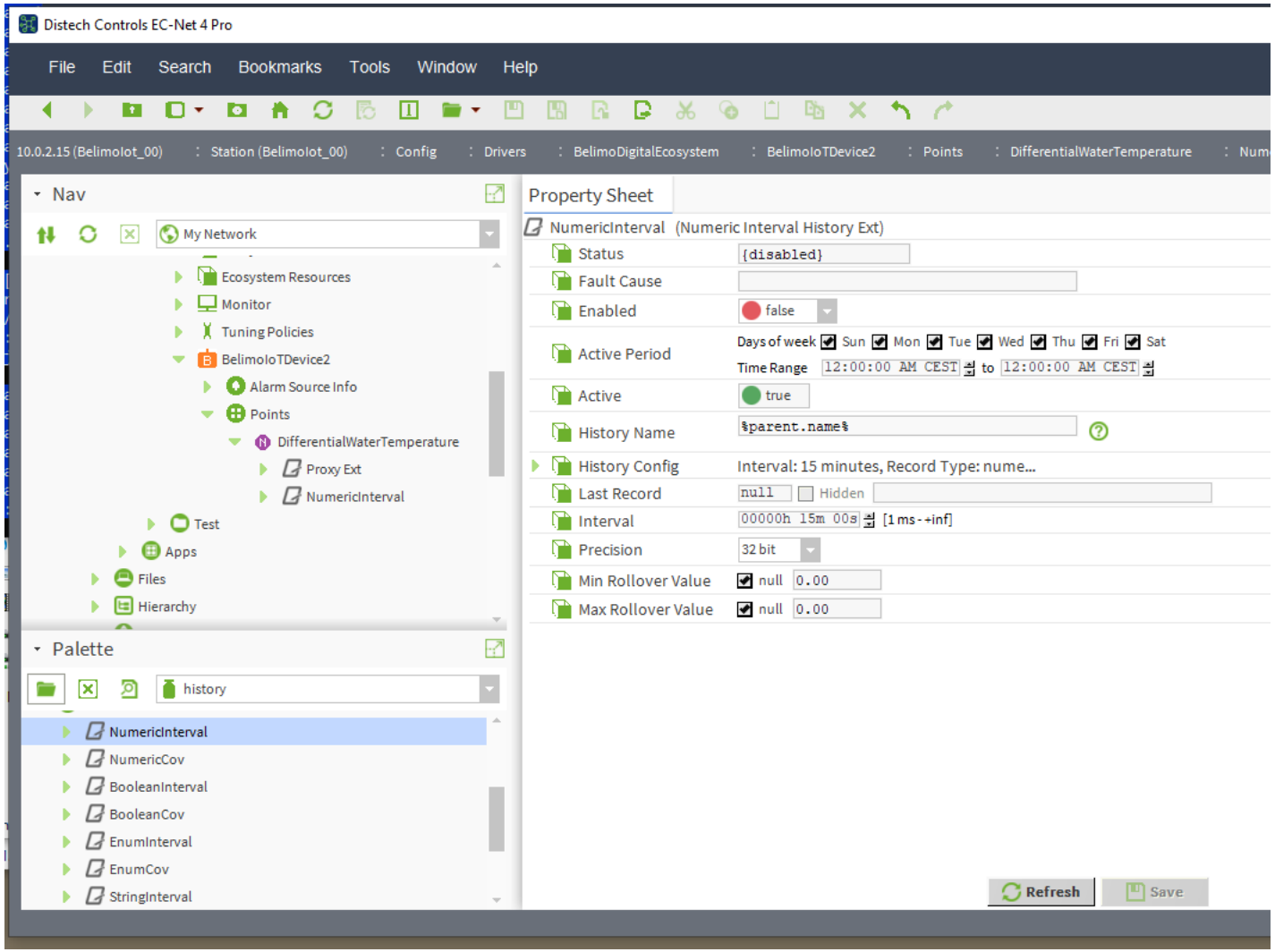
History extensions

Add a history extension to any point to log historical data, that is, to collect a history. Standard components are found in the Extensions folder of the history palette. The Belimo Ecosystem supply a specific history extension to get history data from cloud.

Standard extensions collect data only if connection with devices is present.

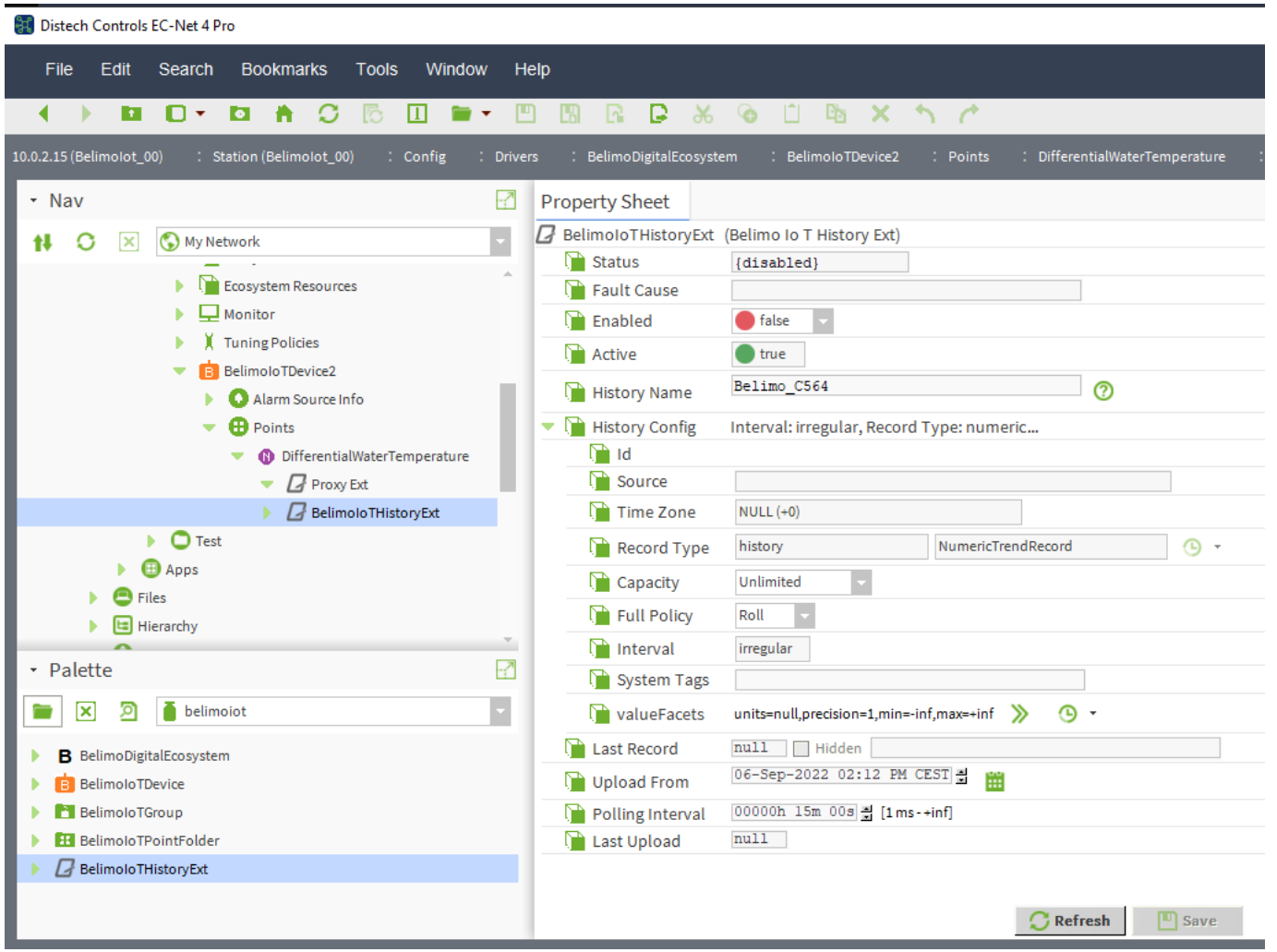


Add Belimo history extension

Belimo history extension allows to read data stored in the cloud. If the connection with cloud has missed, the extension get older data while the connection was missing.

- Select device point and show AX Property Sheet.
- From the palette panel drag and drop the BelimoTHistoryExt into Property Sheet.
- Expand the node just added

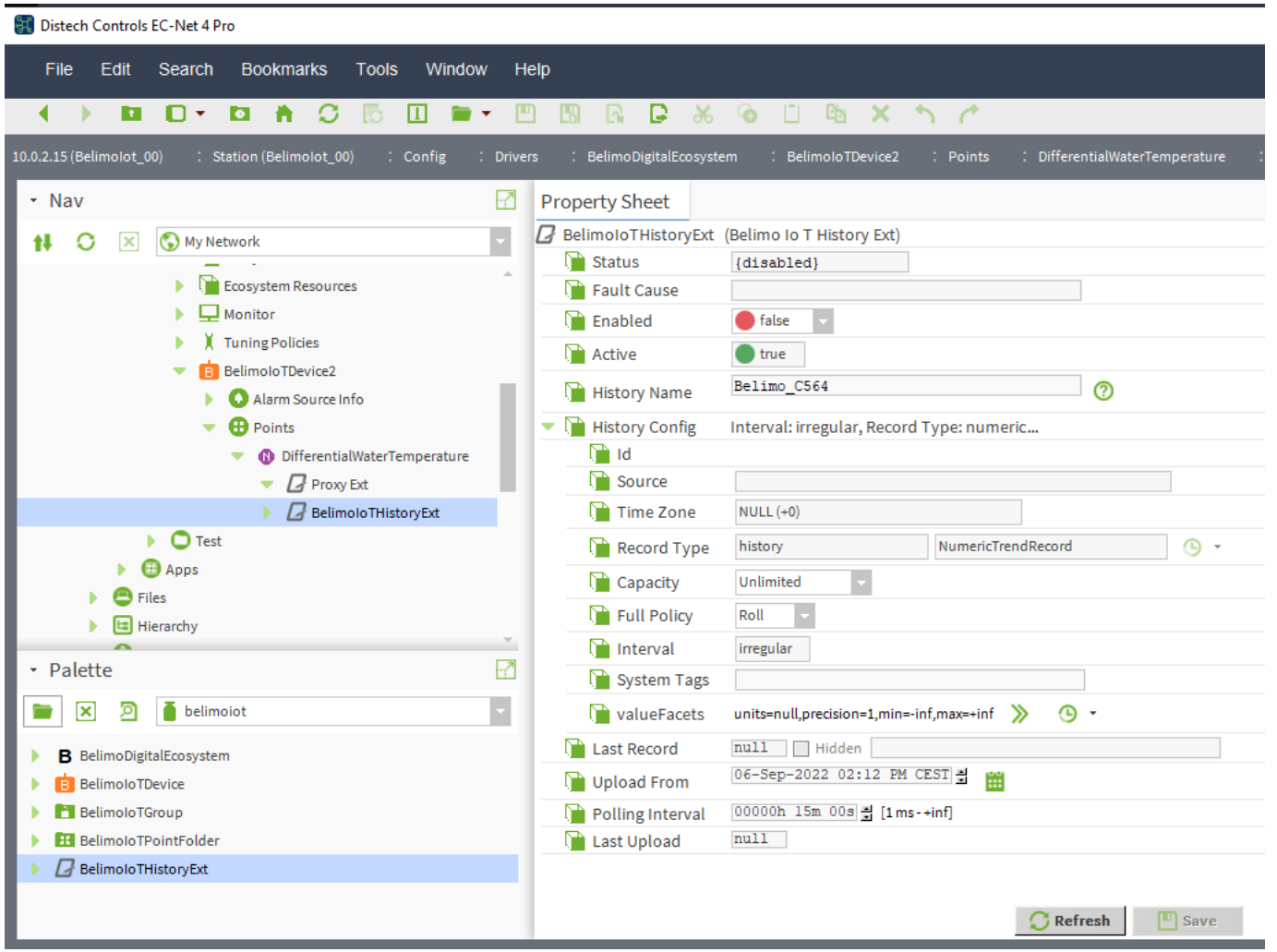
Belimo extension can coexist with standard extension.



Belimo history extension settings

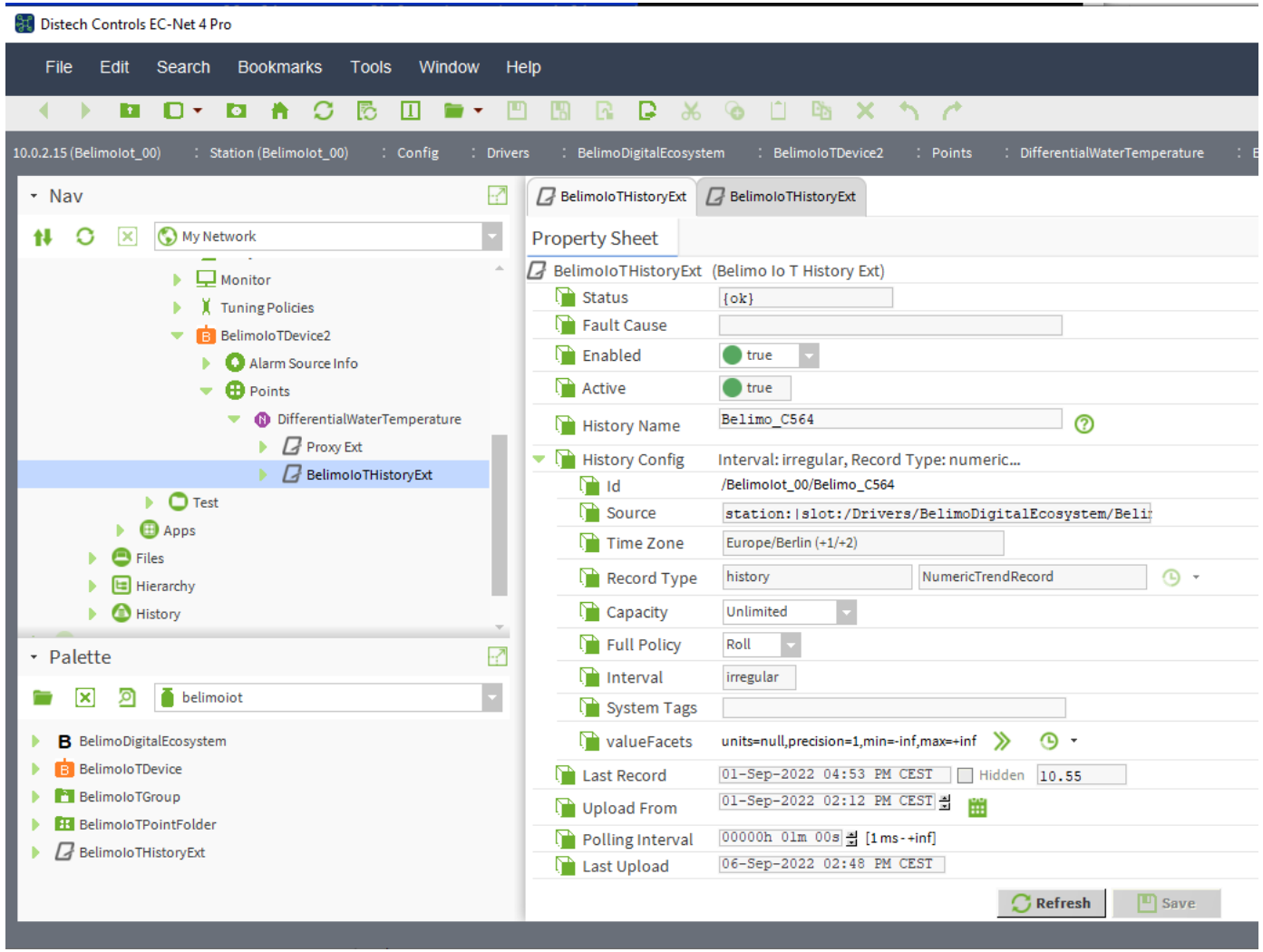
There are some important settings to apply on the component.

- History Name: the component default is a univocal short identifier. The default value can be substituted with “%parent.name%” like standard extensions.
- Upload From: the default value is the date and time when component has been added. A specific date can be selected to download older data at first activation.
- Polling interval: this is the interval time the component wait before to ask for new data to cloud service.



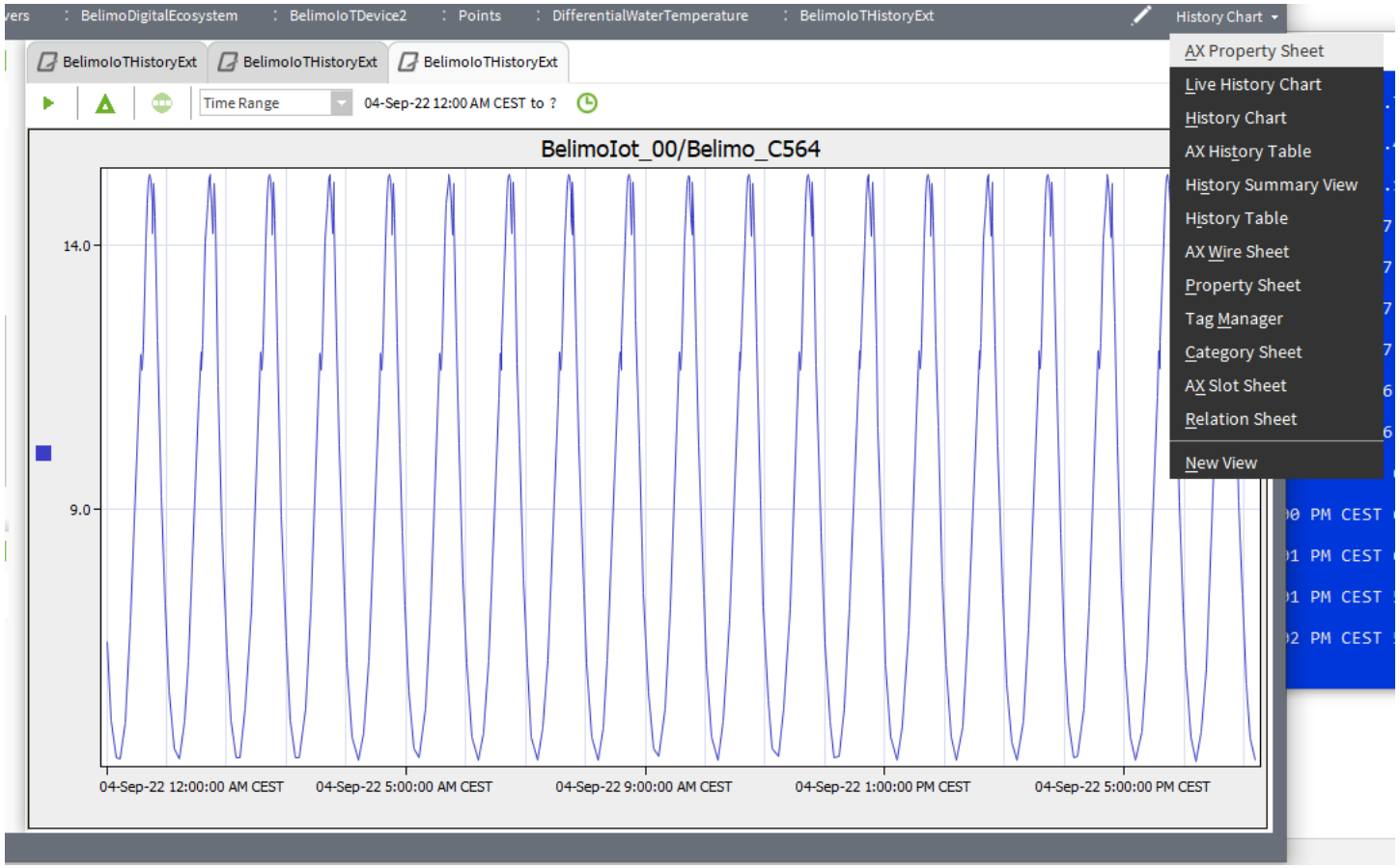
History activation

- Enable the history.
- After this operation an history is created.
- Data downloading can require long time before to complete.



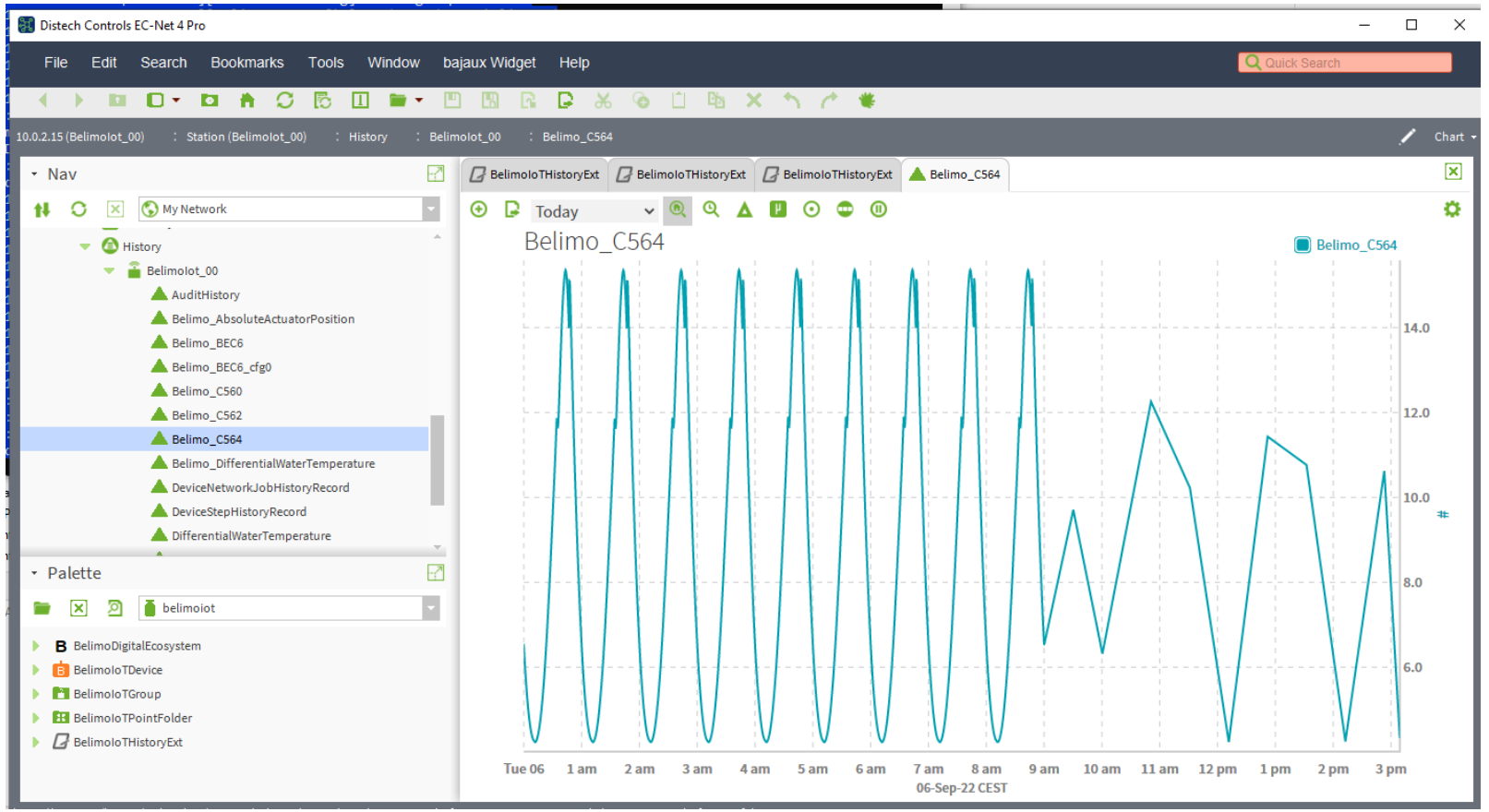
Access to history chart (1)

- Click on right panel History chart



Access to history (2)

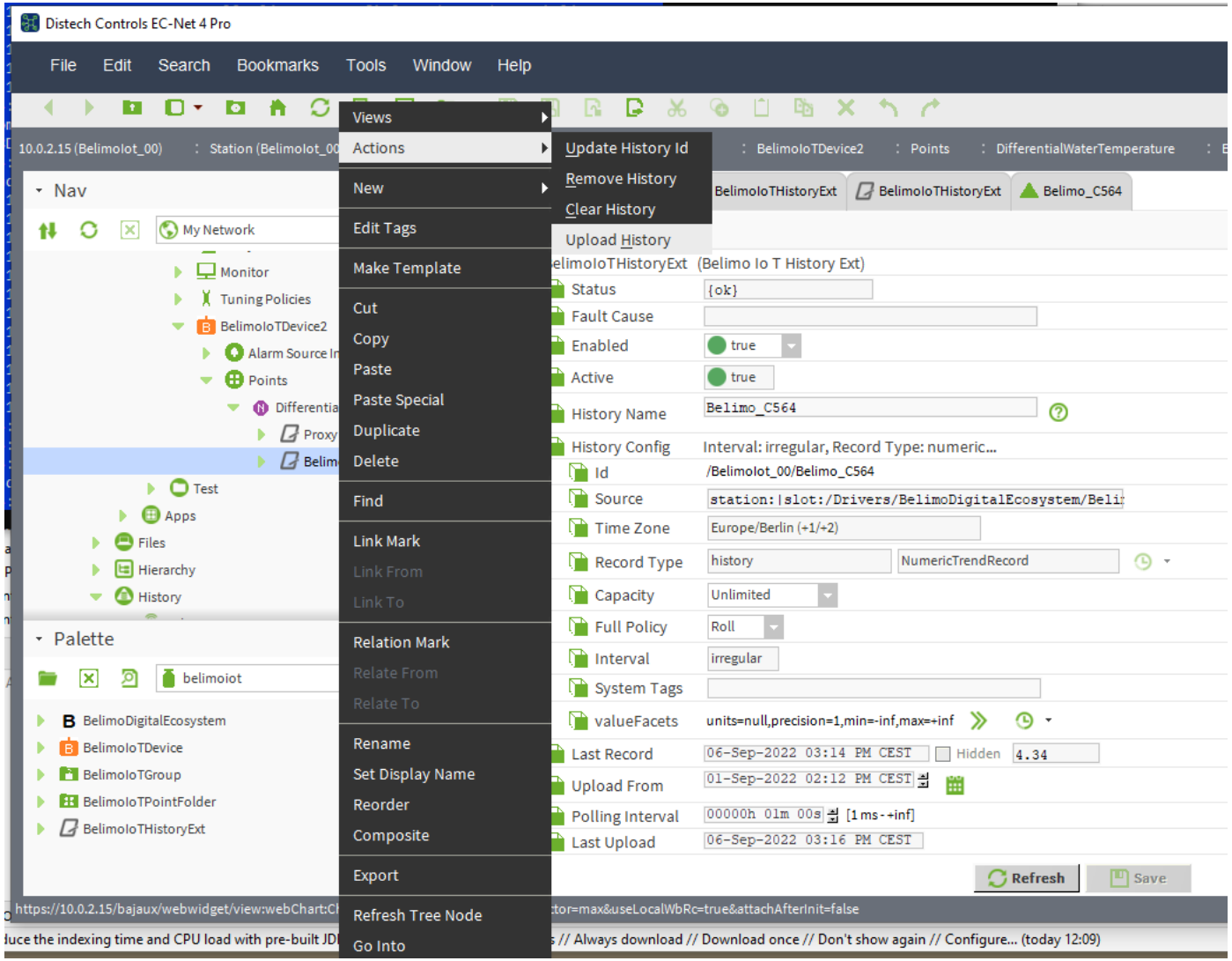
- Navigate to History main folder
- Search the item has the same id of your history point extension
- Double click on the item and a chart view is showed



Belimo History actions

The Belimo history extension has some specific action available.

- Remove History: delete the history database.
- Clear History: remove all data in the history repository.
- Upload History: get data from cloud immediately.



The connector has been developed by:
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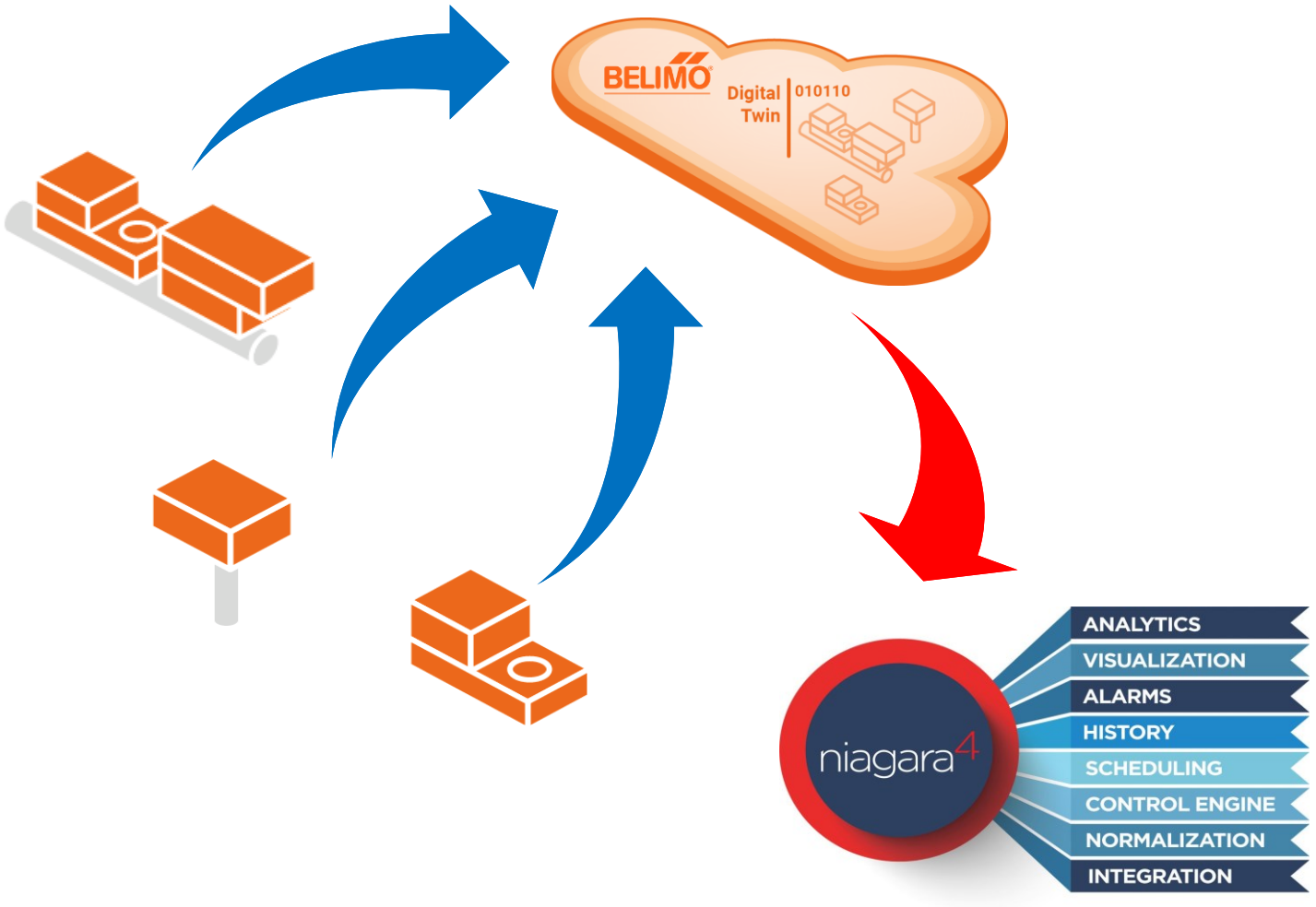
Web site:
www.inlon.it

Contact:
info@inlon.it

Technical support:
mraymondi@inlon.it

You can download from:
github.com/inlon-engineering/niagara-belimo-iot

Thanks to:
BELIMO Automation AG



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