

# Belimo Digital Ecosystem

The Niagara Driver for connecting to the Belimo Cloud API

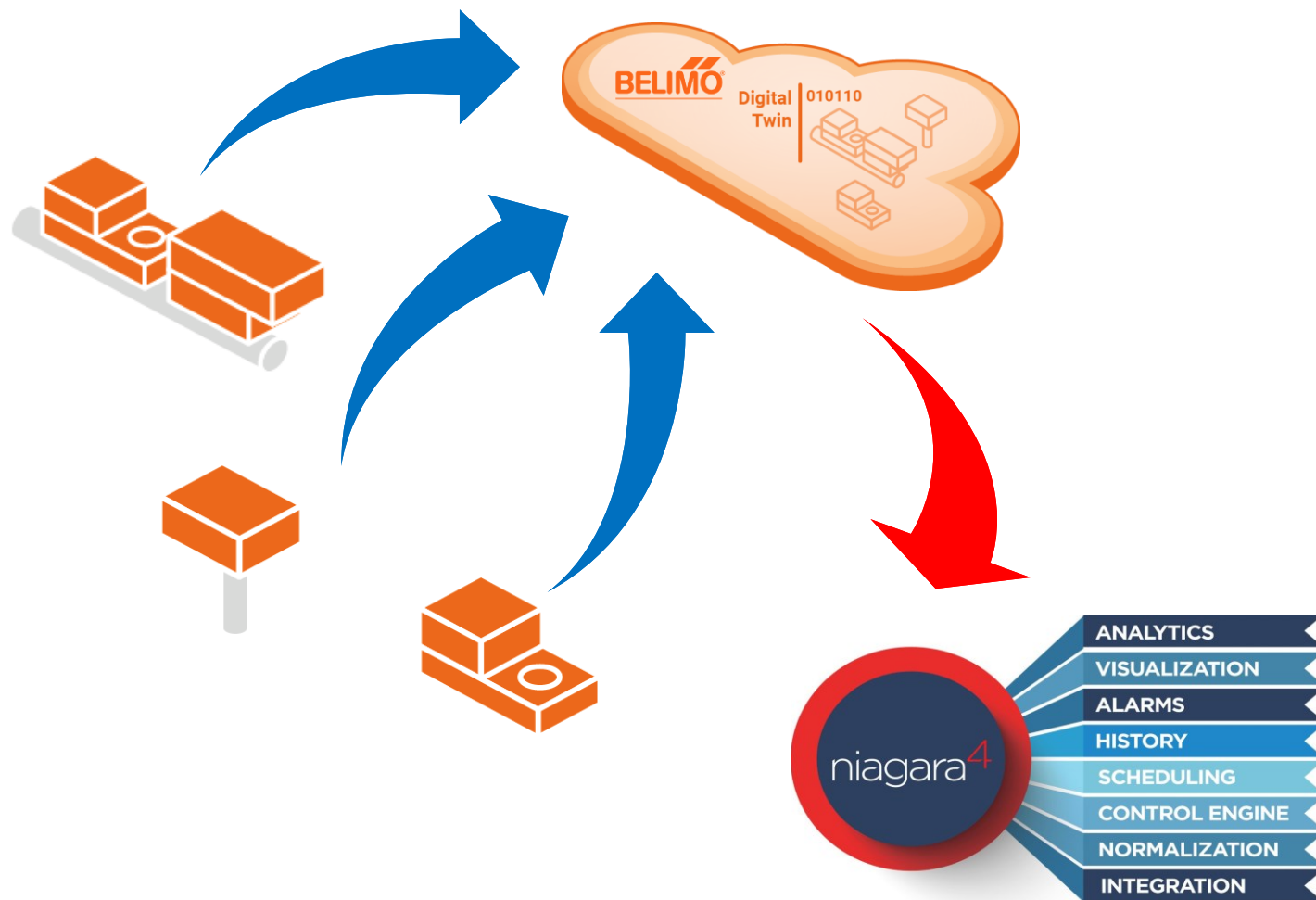
# Contents

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

# The driver

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



# 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

# Installation

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Next steps are about installation  
of the driver before its use

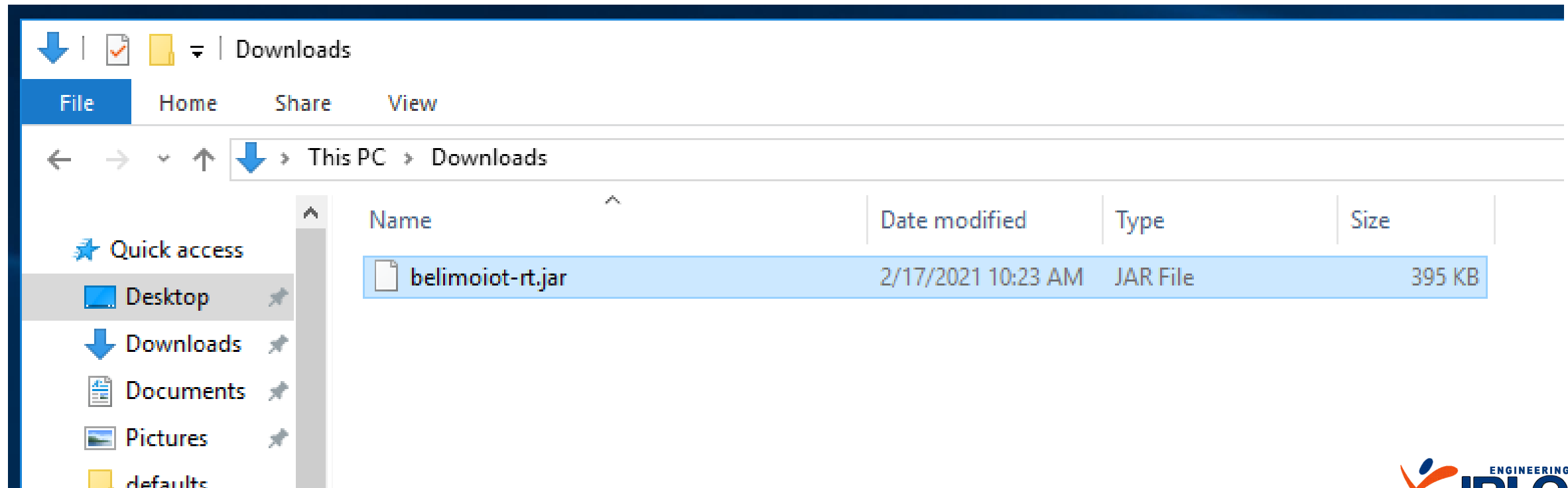
SCAN ME



# 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](https://github.com/inlon-engineering/niagara-belimo-iot)



# 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.

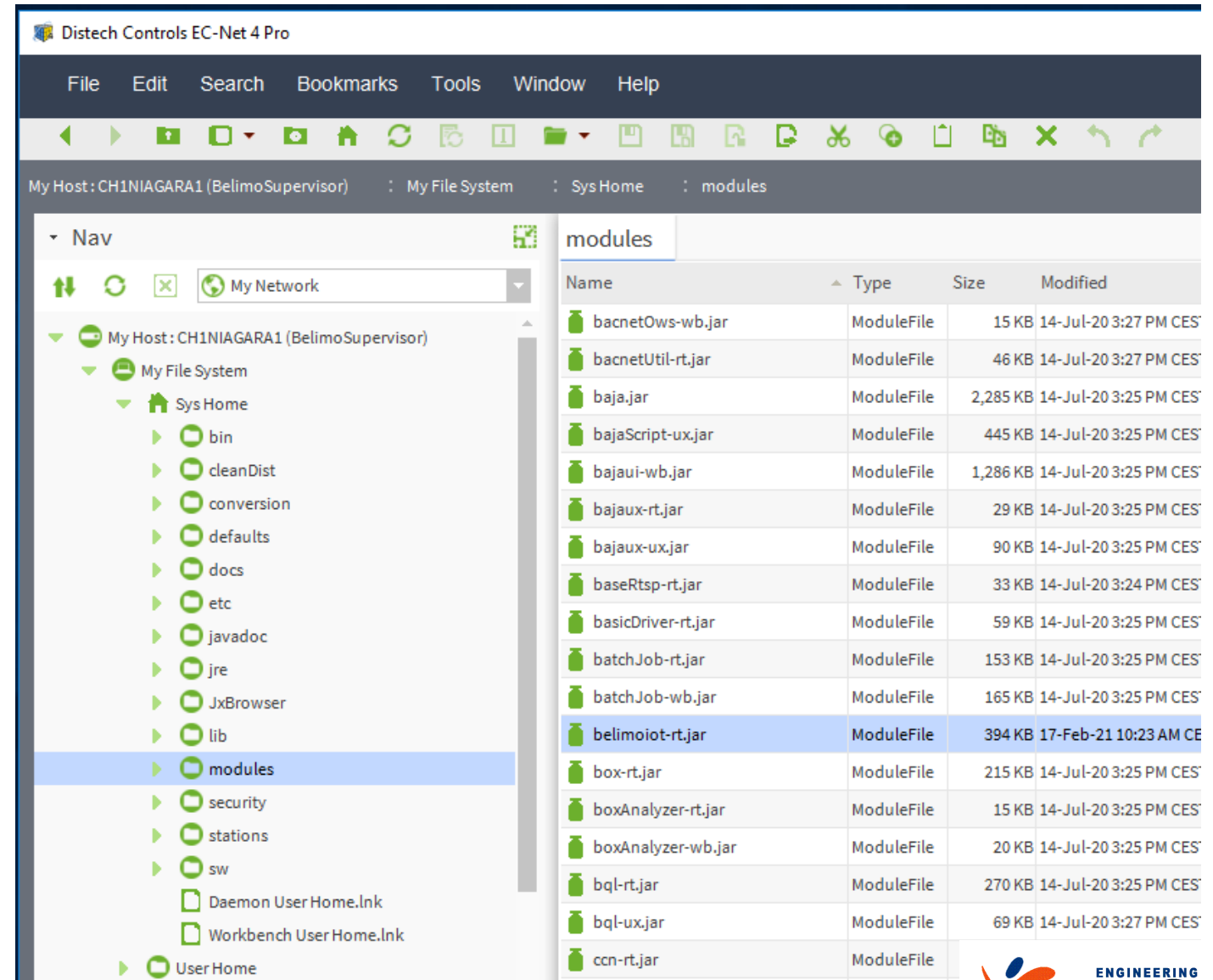
The screenshot shows a Windows File Explorer window with the address bar set to 'This PC > Local Disk (C:) > Niagara > EC-Net4-4.9.0.60 > modules'. The left sidebar shows the 'Local Disk (C:)' selected. The main pane displays a list of files with columns for Name, Date modified, Type, and Size. The file 'belimoiot-rt.jar' is highlighted.

| Name               | Date modified      | Type     | Size   |
|--------------------|--------------------|----------|--------|
| batchJob-rt.jar    | 7/14/2020 3:25 PM  | JAR File | 154 KB |
| batchJob-wb.jar    | 7/14/2020 3:25 PM  | JAR File | 166 KB |
| belimoiot-rt.jar   | 2/17/2021 10:23 AM | JAR File | 395 KB |
| boxAnalyzer-rt.jar | 7/14/2020 3:25 PM  | JAR File | 16 KB  |
| boxAnalyzer-wb.jar | 7/14/2020 3:25 PM  | JAR File | 21 KB  |
| box-rt.jar         | 7/14/2020 3:25 PM  | JAR File | 216 KB |
| bql-rt.jar         | 7/14/2020 3:25 PM  | JAR File | 27 KB  |



# Check the presence of module

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



The screenshot displays the Distech Controls EC-Net 4 Pro application window. The interface includes a menu bar (File, Edit, Search, Bookmarks, Tools, Window, Help) and a toolbar with various icons. The main window is divided into two panes. The left pane, titled 'Nav', shows a hierarchical file system structure under 'My Host: CH1NIAGARA1 (BelimoSupervisor)'. The 'modules' folder is selected and highlighted in blue. The right pane, titled 'modules', displays a table of files within this folder.

| Name               | Type       | Size     | Modified                |
|--------------------|------------|----------|-------------------------|
| bacnetOws-wb.jar   | ModuleFile | 15 KB    | 14-Jul-20 3:27 PM CES'  |
| bacnetUtil-rt.jar  | ModuleFile | 46 KB    | 14-Jul-20 3:27 PM CES'  |
| baja.jar           | ModuleFile | 2,285 KB | 14-Jul-20 3:25 PM CES'  |
| bajaScript-ux.jar  | ModuleFile | 445 KB   | 14-Jul-20 3:25 PM CES'  |
| bajai-wb.jar       | ModuleFile | 1,286 KB | 14-Jul-20 3:25 PM CES'  |
| bajaux-rt.jar      | ModuleFile | 29 KB    | 14-Jul-20 3:25 PM CES'  |
| bajaux-ux.jar      | ModuleFile | 90 KB    | 14-Jul-20 3:25 PM CES'  |
| baseRtsp-rt.jar    | ModuleFile | 33 KB    | 14-Jul-20 3:24 PM CES'  |
| basicDriver-rt.jar | ModuleFile | 59 KB    | 14-Jul-20 3:25 PM CES'  |
| batchJob-rt.jar    | ModuleFile | 153 KB   | 14-Jul-20 3:25 PM CES'  |
| batchJob-wb.jar    | ModuleFile | 165 KB   | 14-Jul-20 3:25 PM CES'  |
| belimoiot-rt.jar   | ModuleFile | 394 KB   | 17-Feb-21 10:23 AM CES' |
| box-rt.jar         | ModuleFile | 215 KB   | 14-Jul-20 3:25 PM CES'  |
| boxAnalyzer-rt.jar | ModuleFile | 15 KB    | 14-Jul-20 3:25 PM CES'  |
| boxAnalyzer-wb.jar | ModuleFile | 20 KB    | 14-Jul-20 3:25 PM CES'  |
| bql-rt.jar         | ModuleFile | 270 KB   | 14-Jul-20 3:25 PM CES'  |
| bql-ux.jar         | ModuleFile | 69 KB    | 14-Jul-20 3:27 PM CES'  |
| ccn-rt.jar         | ModuleFile |          |                         |

# Module signing advice

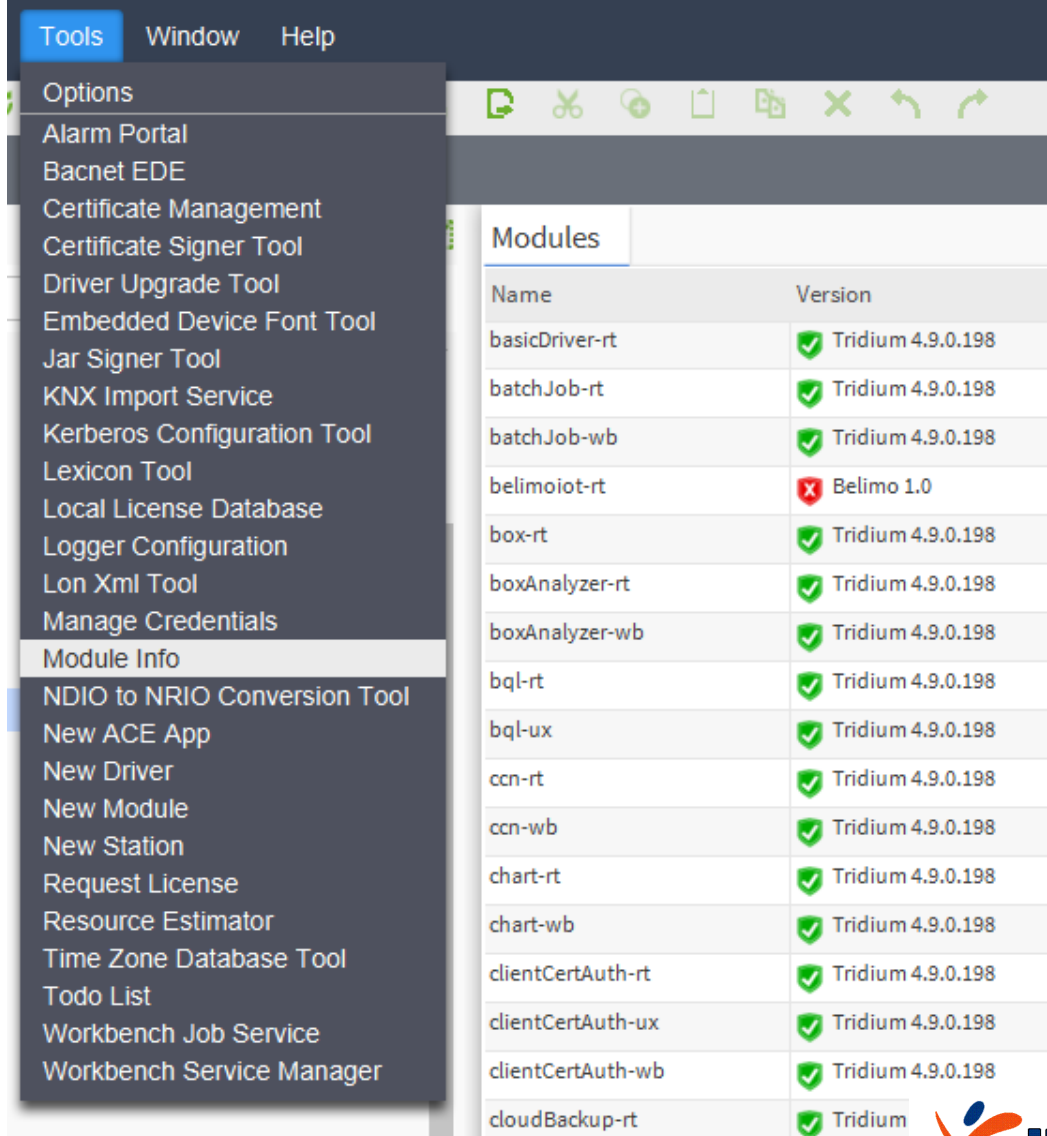
- In Niagara 4.8 and later, there is added support for the signing and verification of third-party modules. Third-party module signing is still optional in most cases, but this will gradually shift to a requirement over the course of the next releases.
- In Niagara 4.8 and later, there are added Workbench 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>

# Check module sign

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



The screenshot shows the INLON software interface. The 'Tools' menu is open, displaying a list of tools. The 'Module Info' tool is highlighted. In the background, the 'Modules' table is visible, listing various modules and their versions. The 'belimoiot-rt' module is marked with a red 'X' icon, indicating a signing issue, while all other modules are marked with a green checkmark icon, indicating they are signed.

| Name              | Version           |
|-------------------|-------------------|
| basicDriver-rt    | Tridium 4.9.0.198 |
| batchJob-rt       | Tridium 4.9.0.198 |
| batchJob-wb       | Tridium 4.9.0.198 |
| belimoiot-rt      | Belimo 1.0        |
| box-rt            | Tridium 4.9.0.198 |
| boxAnalyzer-rt    | Tridium 4.9.0.198 |
| boxAnalyzer-wb    | Tridium 4.9.0.198 |
| bql-rt            | Tridium 4.9.0.198 |
| bql-ux            | Tridium 4.9.0.198 |
| ccn-rt            | Tridium 4.9.0.198 |
| ccn-wb            | Tridium 4.9.0.198 |
| chart-rt          | Tridium 4.9.0.198 |
| chart-wb          | Tridium 4.9.0.198 |
| clientCertAuth-rt | Tridium 4.9.0.198 |
| clientCertAuth-ux | Tridium 4.9.0.198 |
| clientCertAuth-wb | Tridium 4.9.0.198 |
| cloudBackup-rt    | Tridium           |

# Module sign

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If red sign is displayed, a self sign operation can be performed following next instructions, otherwise you can jump them.

The sign operation requires the generation of a certificate, to import the certificate locally and then the sign of the module.



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



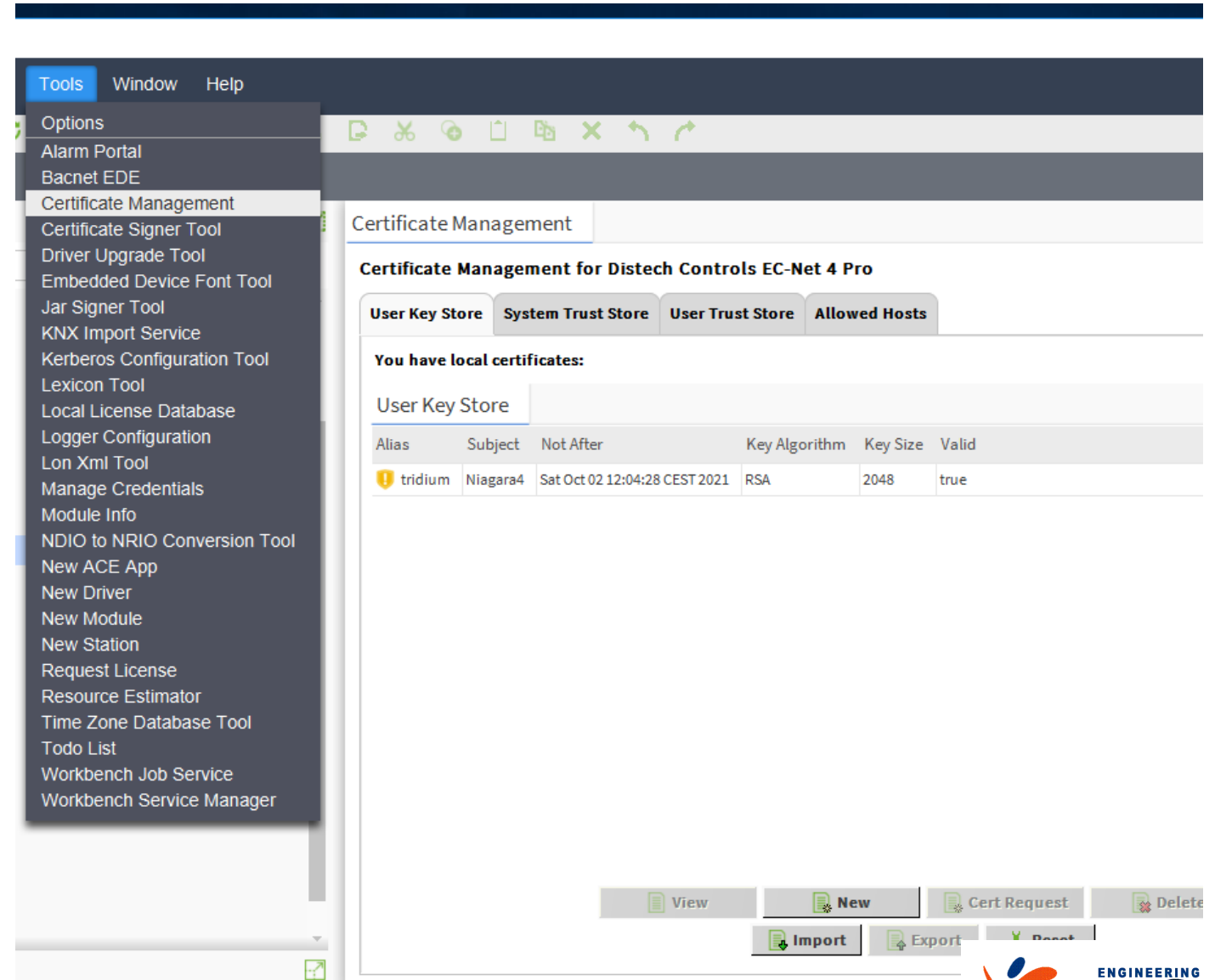
There are warnings, but they are acceptable for the current module verification mode.



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


# Certificate generation

Open the  
Certificate Management tool



# Certificate generation

Click New button and fill the mandatory fields.

**Generate Self Signed Certificate**  
Generates a self signed certificate and inserts it into the keystore

|                          |  |            |
|--------------------------|--|------------|
| Alias                    | <input type="text" value="belimo-cert"/>   | (required) |
| Common Name (CN)         | <input type="text" value="bc"/>  | (required) |
|                          | * this may contain the host name or address of the server  |            |
| Organizational Unit (OU) | <input type="text"/>   |            |
| Organization (O)         | <input type="text" value="MyCompany"/>   | (required) |
| Locality (L)             | <input type="text"/>   |            |
| State/Province (ST)      | <input type="text"/>   |            |
| Country Code (C)         | <input type="text" value="CH"/>  | (required) |
| Not Before               | <input type="text" value="17-Feb-2021 11:46 AM CET"/>  |            |
| Not After                | <input type="text" value="17-Feb-2022 11:46 AM CET"/>  |            |
| Key Size                 | <input type="radio"/> 1024 bits <input checked="" type="radio"/> 2048 bits <input type="radio"/> 3072 bits <input type="radio"/> 4096 bits |            |
| Certificate Usage        | <input type="radio"/> Server <input type="radio"/> Client <input type="radio"/> CA <input checked="" type="radio"/> Code Signing           |            |
| Alternate Server Name    | <input type="text"/>   |            |
| Email Address            | <input type="text"/>   |            |
| <div>OKCancel</div>      |  |            |

# Certificate generation

Insert a security password to protect your certificate.

**Generate Self Signed Certificate**  
Generates a self signed certificate and inserts it into the keystore

Alias: belimo-cert (required)

Common Name (CN): bc (required)

Organizational Unit (OU):

Organization (O): (required)

Locality (L):

State/Province (ST):

Country Code (C):

Not Before:

Not After:

Key Size: ☐ 1024 bits ☒ 2048 bits ☐ 3072 bits ☐ 4096 bits

Certificate Usage: ☐ Server ☐ Client ☐ CA ☒ Code Signing

Alternate Server Name:

Email Address:

**Private Key Password**  
Private Key Password

Private Key Password (required):

Password: ●●●●●●

Confirm: ●●●●●●

OK Cancel

OK Cancel

# Certificate generation

Now the certificate is visible on the list. Click the export button.

## Certificate Management

### Certificate Management for Distech Controls EC-Net 4 Pro

User Key Store

System Trust Store

User Trust Store

Allowed Hosts

You have local certificates:

#### User Key Store

| Alias         | Subject  | Not After                     | Key Algorithm | Key Size | Valid |
|---------------|----------|-------------------------------|---------------|----------|-------|
| ! tridium     | Niagara4 | Sat Oct 02 12:04:28 CEST 2021 | RSA           | 2048     | true  |
| ! belimo-cert | bc       | Thu Feb 17 11:46:39 CET 2022  | RSA           | 2048     | true  |

View

New

Cert Request

Delete

Import

Export

Reset

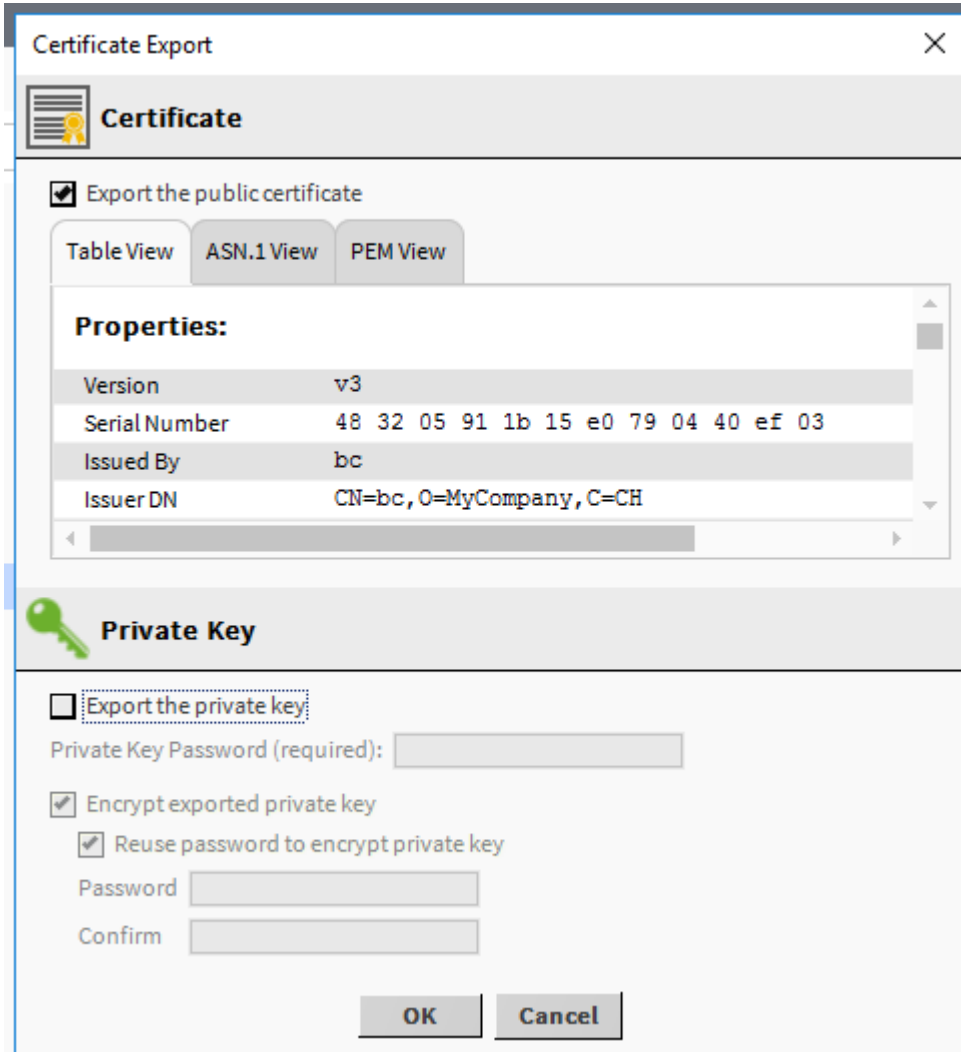


Website: [www.inlon.it](http://www.inlon.it)  
Email: [info@inlon.it](mailto:info@inlon.it)



# Export certificate

Click the ok button to save the file with 'pem' extension. Remember the location for later load.



The image shows a 'Certificate Export' dialog box with a close button (X) in the top right corner. It is divided into two main sections: 'Certificate' and 'Private Key'.

**Certificate Section:**

- There is a checked checkbox labeled 'Export the public certificate'.
- Below this are three tabs: 'Table View' (selected), 'ASN.1 View', and 'PEM View'.
- A 'Properties:' section contains a table with the following data:

|               |                                     |
|---------------|-------------------------------------|
| Version       | v3                                  |
| Serial Number | 48 32 05 91 1b 15 e0 79 04 40 ef 03 |
| Issued By     | bc                                  |
| Issuer DN     | CN=bc, O=MyCompany, C=CH            |

**Private Key Section:**

- There is an unchecked checkbox labeled 'Export the private key'.
- Below it is a text field for 'Private Key Password (required):'.
- There is a checked checkbox labeled 'Encrypt exported private key'.
- Below that is a checked checkbox labeled 'Reuse password to encrypt private key'.
- There are two text fields: 'Password' and 'Confirm'.
- At the bottom right are 'OK' and 'Cancel' buttons.

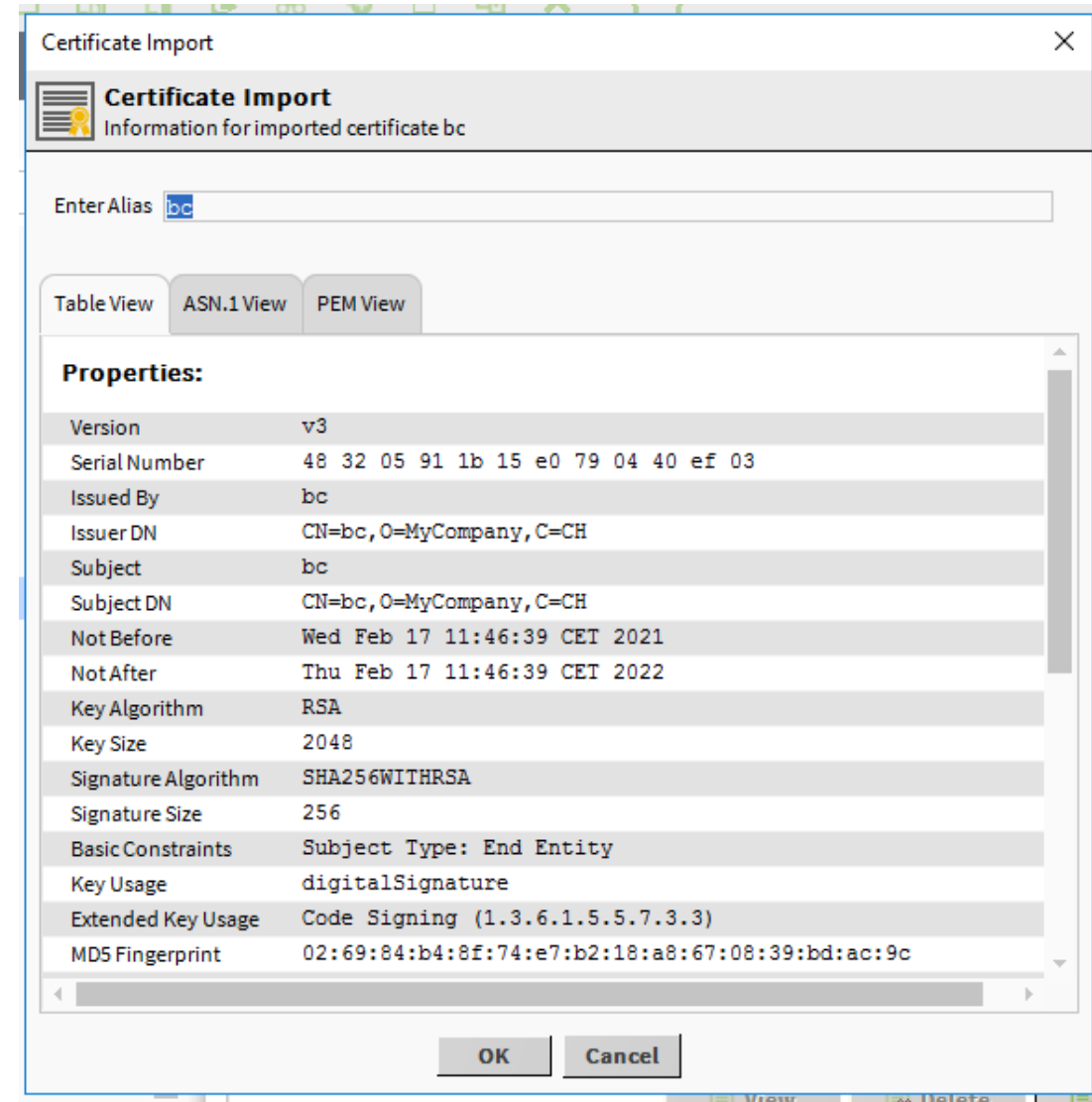
# Import certificate

Select the tab 'User trust store' and click the import button. Select the file you have just exported before.

The screenshot shows the 'Certificate Management' interface for 'Distech Controls EC-Net 4 Pro'. At the top, there's a 'Certificate Management' tab. Below it, the title 'Certificate Management for Distech Controls EC-Net 4 Pro' is displayed. A row of four tabs is present: 'User Key Store', 'System Trust Store', 'User Trust Store' (which is selected), and 'Allowed Hosts'. Below the tabs, a message states: 'You have user certificates that identify these certificate authorities:'. Underneath this message, the 'User Trust Store' sub-tab is selected, showing a table with headers: 'Alias', 'Subject', 'Not After', 'Key Algorithm', 'Key Size', and 'Valid'. The table is currently empty. At the bottom right of the interface, there are five buttons: 'View', 'Delete', 'Import', 'Approve', and 'Export'. The 'Import' button is highlighted with a green border.

# Import certificate

Confirm import of selected certificate file. A content view is visible.



# Import certificate

Now the certificate is available locally.

Certificate Management

Certificate Management for Distech Controls EC-Net 4 Pro

User Key Store

System Trust Store

User Trust Store

Allowed Hosts

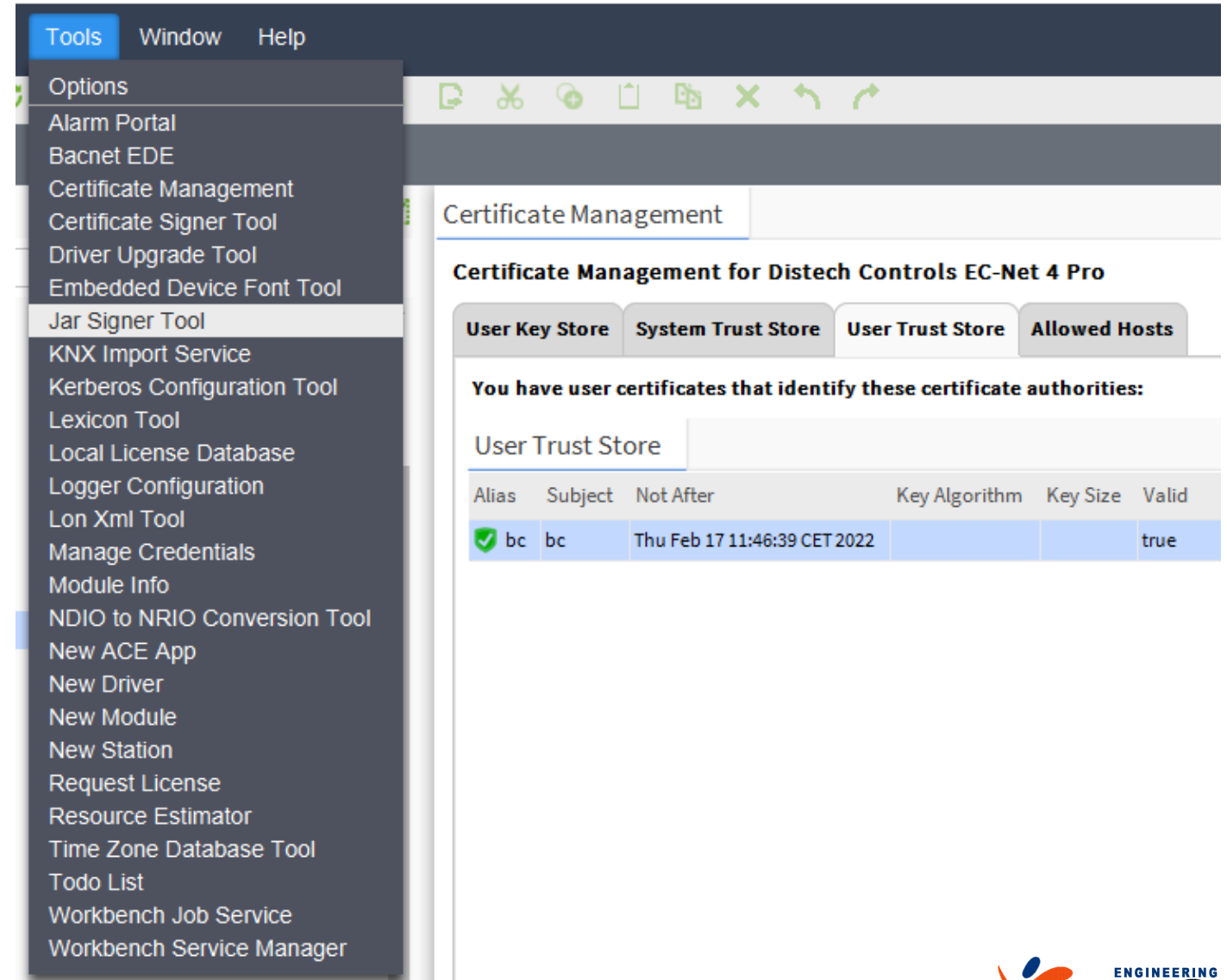
You have user certificates that identify these certificate authorities:

User Trust Store

| Alias | Subject | Not After                    | Key Algorithm | Key Size | Valid |
|-------|---------|------------------------------|---------------|----------|-------|
| ✓ bc  | bc      | Thu Feb 17 11:46:39 CET 2022 |               |          | true  |

# Module self sign

Open the jar signer tool



## Module self sign

Select the jar module into modules folder, then input the password supplied during certificate creation and click ok button.

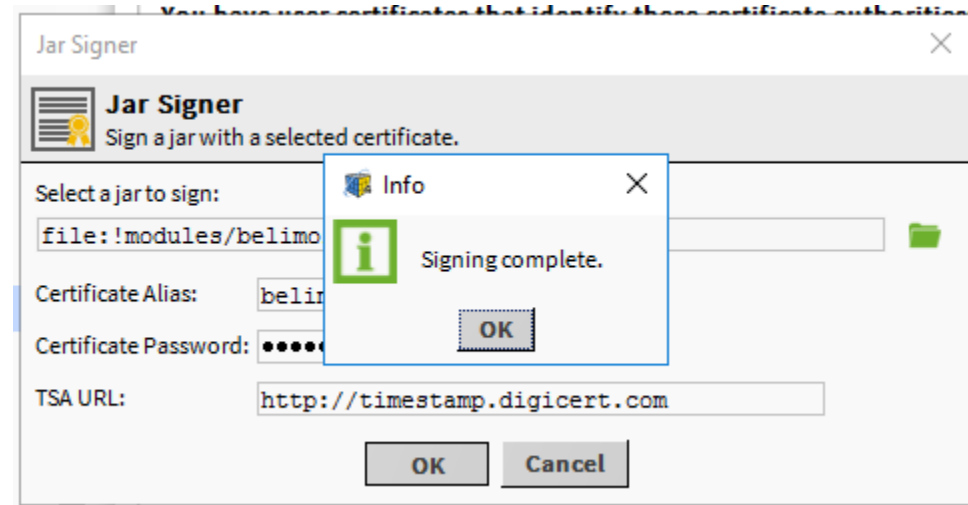
The tool generate a new jar module and save it to a location where you can pick it up later.



The screenshot shows the 'Jar Signer' dialog box. At the top, it has a title bar 'Jar Signer' and a header area with a document icon and the text 'Jar Signer Sign a jar with a selected certificate.' Below this, there is a section 'Select a jar to sign:' with a text field containing 'file:!modules/belimo-rt.jar'. Underneath, there are three fields: 'Certificate Alias:' with a dropdown menu showing 'belimo-cert', 'Certificate Password:' with a masked password field (10 dots), and 'TSA URL:' with a text field containing 'http://timestamp.digicert.'. At the bottom right, there are two buttons: 'OK' and 'Cancel'.

# Module self sign

Operation must complete with success.



# Copy signed module

1

Close the Workbench application

2

Copy the saved signed jar module into your !/modules directory. Now you have replaced the module.

3





Open the Workbench application and the module info tool.



## Check module info

Now the module is correctly signed and can be used.

The yellow shield icon means that it is a self-signed module. Signing it by a recognized certification authority will make the green shield icon to appear.

| Name           | Version   |
|----------------|---|
| bajau-wb       |  Tridium 4.9.0.198   |
| bajaux-rt      |  Tridium 4.9.0.198   |
| bajaux-ux      |  Tridium 4.9.0.198   |
| baseRtsp-rt    |  Tridium 4.9.0.198   |
| basicDriver-rt |  Tridium 4.9.0.198   |
| batchJob-rt    |  Tridium 4.9.0.198   |
| batchJob-wb    |  Tridium 4.9.0.198   |
| belimoiot-rt   |  Belimo 1.0         |
| box-rt         |  Tridium 4.9.0.198 |
| boxAnalyzer-rt |  Tridium 4.9.0.198 |

# Using the module

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Next steps require  
a running station

# Load the palette

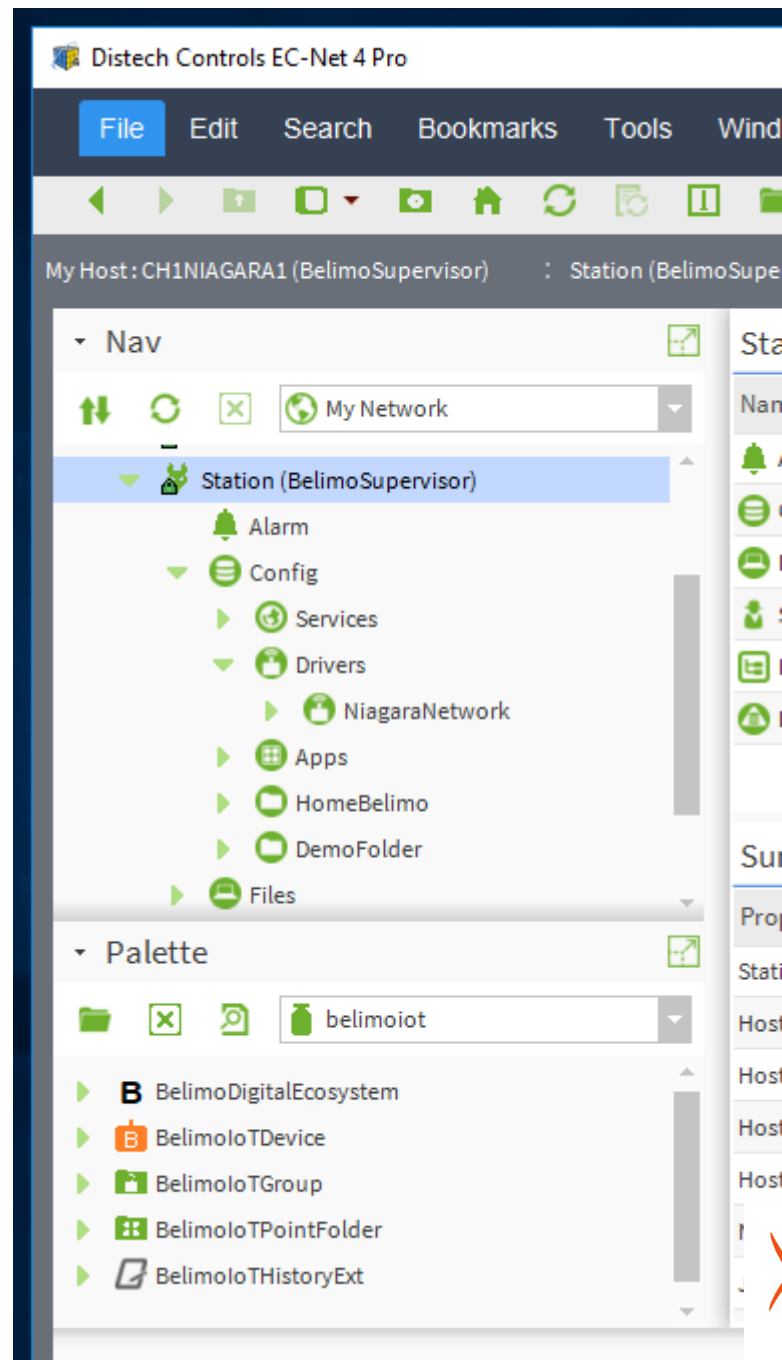
Open the palette view and select the belimoiot one.

The screenshot shows the INLON software interface. On the left, a navigation pane (Nav) lists 'UserHome', 'A:', 'C:', 'Z:', 'My Modules', 'Platform', and 'Station (BelimoSupervisor)'. Below it, a 'Palette' section shows 'kitControl' and 'ControlPalette'. A dialog box titled 'Open Palette' is open in the center, prompting the user to 'Select one or more palettes to open, or just start typing:'. It features a search filter and a table of modules. The 'belimoiot' module is highlighted at the bottom of the table.

| Module            | Description   |
|-------------------|---|
| bacnetAlarmRouter | Allows re-assignment of alarm classes for Bacnet recv. alarms |
| bacnetAws         | Niagara BACnet AWS Driver                                     |
| bacnetOws         | Niagara BACnet OWS Driver                                     |
| bacnetUtil        | Niagara BACnet Utilities                                      |
| baja              | Niagara Framework   |
| bajaui            | Niagara User Interface Framework                              |
| batchJob          | Batch Jobs  |
| belimoiot         | Belimo driver to connect cloud resources                      |

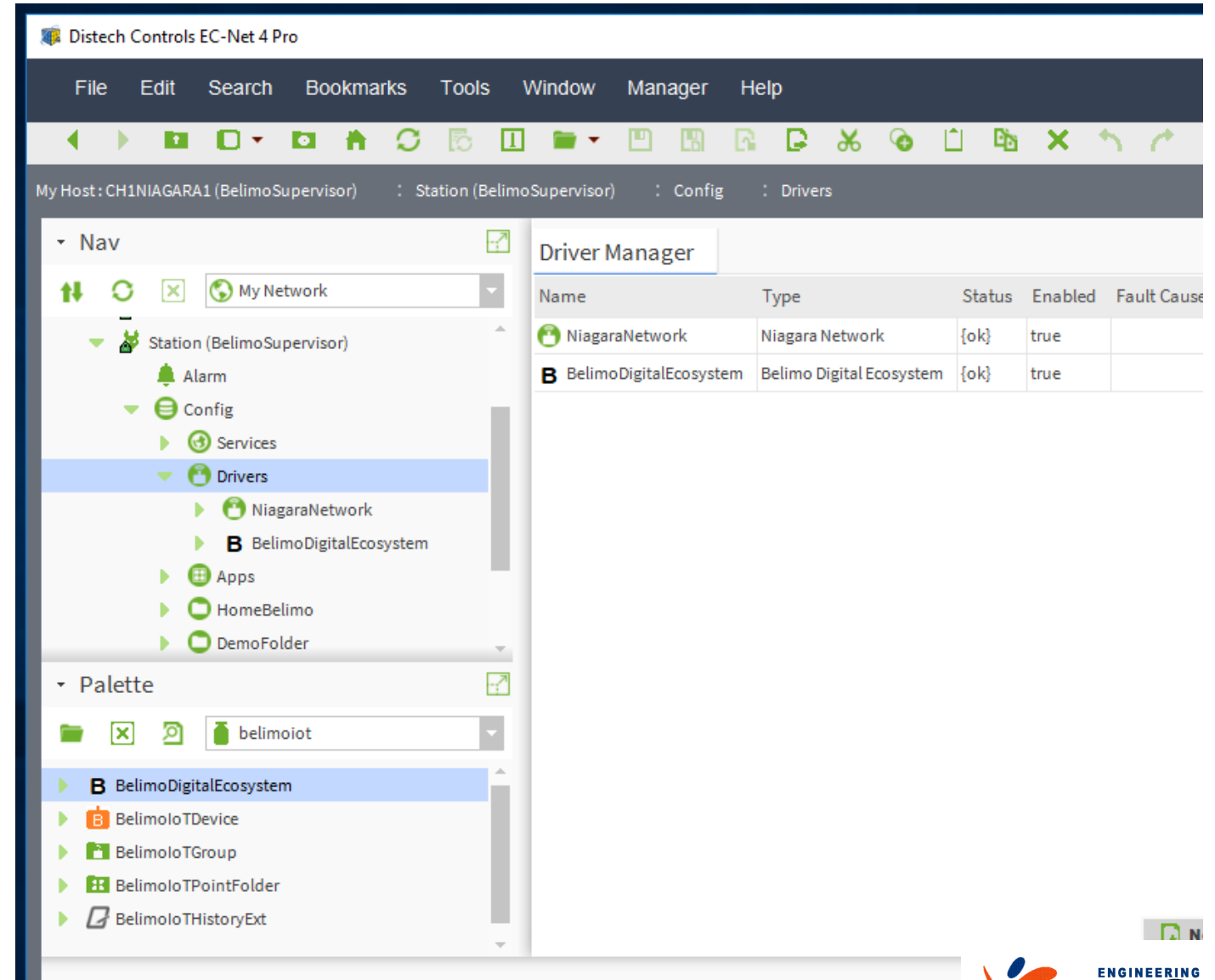
# The Belimo palette

This is the palette of the Belimo Digital Ecosystem.



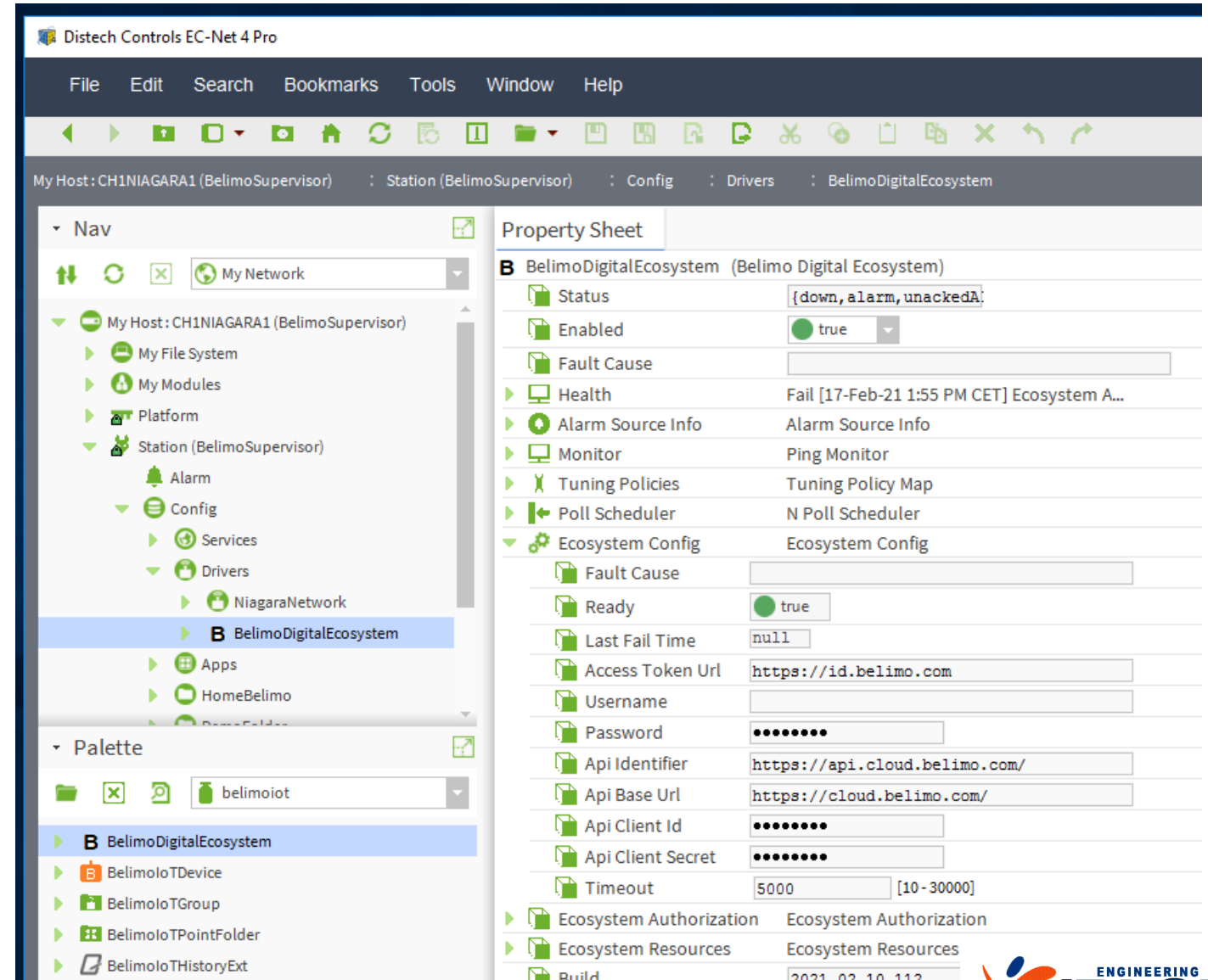
# Add the driver to network

- 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.

|   |  |                      |  |                   |  |
|---|--|----------------------|--|-------------------|--|
| ...rs/BelimoDigitalEcosystem                      |  | Application Director |  | BelimoDigitalEcos |  |
| Property Sheet                                    |  |                      |  |                   |  |
| BelimoDigitalEcosystem (Belimo Digital Ecosystem) |  |                      |  |                   |  |
| Status  | {ok}                                     |                      |  |                   |  |
| Enabled   | <input checked="" type="checkbox"/> true |                      |  |                   |  |
| Fault Cause                                       |  |                      |  |                   |  |
| Health  | Ok [17-Feb-21 2:05 PM CET]               |                      |  |                   |  |
| Down  | <input type="checkbox"/> false           |                      |  |                   |  |
| Alarm   | <input type="checkbox"/> false           |                      |  |                   |  |
| Last Ok Time                                      | 17-Feb-2021 02:05 PM CET                 |                      |  |                   |  |
| Last Fail Time                                    | 17-Feb-2021 02:03 PM CET                 |                      |  |                   |  |
| Last Fail Cause                                   | Ecosystem Authorization is missing       |                      |  |                   |  |
| Alarm Source Info                                 | Alarm Source Info                        |                      |  |                   |  |








# 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.

Supervisor) : Config : Drivers : BelimoDigitalEcosystem

Belimoiot Discovery

Discovered

| Deviceid   | Devicename                             | Ownerid    | Ownername           | Projectname  |
|--|--|------------|---------------------|--------------|
|  a5690dde-be6f-46fd-983e-e9beb3aa7d00 | PublicIoT Actuator V1.02               | IA1Q808HY3 | ClientAPI Usergroup | TEST         |
|  108a36f6-6466-4988-b9b0-a3efd2005c42 | EV54_EVNG_Feldtest_22011-30054-022-246 | GZSGW1WQER | EnergyValve_Belimo  | Project name |
|  ff265b95-ff7b-4d65-952b-f7087862df05 | EV53_EVNG_Feldtest_22011-30053-022-246 | GZSGW1WQER | EnergyValve_Belimo  | Project name |
|  02f4e962-922e-499f-9e31-90210a6e17da | EV52_EVNG_Feldtest_22011-30052-022-246 | GZSGW1WQER | EnergyValve_Belimo  | Project name |
|  0c5aa95d-509e-4d66-b53c-5e2883b850d1 | Heute LD5 670                          | GZSGW1WQER | EnergyValve_Belimo  | Project name |
|  73ffd901-27b6-464a-a37b-2c717c3d36ab | EV4_EVNG_ERGON-TB_A3                   | GZSGW1WQER | EnergyValve_Belimo  | Project name |
|  6f661025-ac12-46e0-9fe3-756fbd183227 | EV4_EVNG_Feldtest_IER03                | GZSGW1WQER | EnergyValve_Belimo  |              |

Database

| Name | Type | Exts | Status | Deviceid | Devicename | Ownerid | Ownername | Projectname | Addresscity | Addresscountry | Serialnumber | Pro |
|------|------|------|--------|----------|------------|---------|-----------|-------------|-------------|----------------|--------------|-----|
|------|------|------|--------|----------|------------|---------|-----------|-------------|-------------|----------------|--------------|-----|

New Folder New Edit Discover Cancel Add



## Device add

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

The 'Add' dialog box contains a table of existing devices and a form for adding a new one.

| Name             | Type               | Status | Deviceid                             | Devicename                             |
|------------------|--------------------|--------|--------------------------------------|--|
| BelimoIoTDevice  | Belimo Io T Device | {ok}   | ff265b95-ff7b-4d65-952b-f7087862df05 | EV53_EVNG_Feldtest_22011-30053-022-246 |
| BelimoIoTDevice1 | Belimo Io T Device | {ok}   | 02f4e962-922e-499f-9e31-90210a6e17da | EV52_EVNG_Feldtest_22011-30052-022-246 |


Below the table, the form fields are as follows:

- Name: BelimoIoTDevice
- Type: Belimo Io T Device
- Status: {ok}
- Deviceid: ff265b95-ff7b-4d65-952b-f7087862df05
- Devicename: EV53\_EVNG\_Feldtest\_22011-30053-022-246
- Ownerid: GZSGW1WQER
- Ownername: EnergyValve\_Belimo
- Projectname: Project name
- Addresscity: City
- Addresscountry: CH
- Serialnumber: 22011-30053-022-246
- Profileid: energyvalve4/1.2
- Profilename: device.belimo.energy-valve-Version4/1.2
- Profileref: /definitions/dataprofiles/energyvalve4/1







At the bottom of the dialog are 'OK' and 'Cancel' buttons. Below the dialog is a toolbar with buttons: 'New', 'Edit', 'Discover', 'Cancel', 'Add', 'Match', and 'TagIt'.

## Device add





- Added devices are visible on lower list.

 Belimoiot Discovery

### Discovered

| Deviceid   | Devicename                             | O  |
|--|--|----|
|  a5690dde-be6f-46fd-983e-e9beb3aa7d00 | Public IoT Actuator V1.02              | IA |
|  108a36f6-6466-4988-b9b0-a3efd2005c42 | EV54_EVNG_Feldtest_22011-30054-022-246 | G2 |
|  ff265b95-ff7b-4d65-952b-f7087862df05 | EV53_EVNG_Feldtest_22011-30053-022-246 | G2 |
|  02f4e962-922e-499f-9e31-90210a6e17da | EV52_EVNG_Feldtest_22011-30052-022-246 | G2 |
|  0c5aa95d-509e-4d66-b53c-5e2883b850d1 | Heute LD5 670                          | G2 |
|  73ffd901-27b6-464a-a37b-2c717c3d36ab | EV4_EVNG_ERGON-TB_A3                   | G2 |
|  6f661025-ac12-46e0-9fe3-756fbd183227 | EV4_EVNG_Feldtest_IER03                | G2 |

### Database

| Name   | Type               | Exts  | Status | Deviceid                             | Devic |
|--|--------------------|---|--------|--------------------------------------|-------|
|  BelimoloTDevice  | Belimo lo T Device |  | {ok}   | ff265b95-ff7b-4d65-952b-f7087862df05 | EV53_ |
|  BelimoloTDevice1 | Belimo lo T Device |  | {ok}   | 02f4e962-922e-499f-9e31-90210a6e17da | EV52_ |

## 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.

The screenshot displays the Belimo Digital Ecosystem software interface. On the left, the 'Nav' (Navigation) tree shows a hierarchical structure. The 'Station (BelimoSupervisor)' is expanded, showing 'Alarm', 'Config', 'Services', and 'Drivers'. Under 'Drivers', 'NiagaraNetwork' is expanded, showing 'BelimoDigitalEcosystem'. This folder is further expanded to show 'Ecosystem Config', 'Ecosystem Authorization', 'Ecosystem Resources', 'Monitor', 'Tuning Policies', 'BelimoloTDevice' (highlighted in blue), and 'BelimoloTDevice1'. On the right, the 'Property Sheet' for 'BelimoloTDevice (Belimo Io T Device)' is displayed. It contains various properties and their values:








| Property Sheet                       |                     |
|--------------------------------------|---------------------|
| BelimoloTDevice (Belimo Io T Device) |                     |
| Status                               | {ok}                |
| Enabled                              | true                |
| Fault Cause                          |                     |
| Health                               | Fail [null]         |
| Alarm Source Info                    | Alarm Source Info   |
| Poll Frequency                       | Normal              |
| Points                               | Belimo Io T Point D |
| Last Cloud Read                      | 17-Feb-2021 02:3    |
| Deviceid                             | ff265b95-ff7b-4c    |
| Devicename                           | EV53_EVNG_Feldte    |
| Ownerid                              | GZSGW1WQER          |
| Ownername                            | EnergyValve_Beli    |
| Projectname                          | Project name        |
| Addresscity                          | City                |
| Addresscountry                       | CH                  |
| Serialnumber                         | 22011-30053-022-    |
| Profileid                            | energyvalve4/1.2    |
| Profilename                          | device.belimo.er    |
| Profileref                           | /definitions/dat    |

## 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.

BelimoIoT Discovery

Discovered

| Pointid   | Point Caption                         | Point Name                | Current Value         | Description   |
|---|---------------------------------------|---------------------------|-----------------------|---------------|
|  evcloud.00009   | Valve Type (0=2-way EV3, 1=3-way EV3) | ValveType                 | V0                    | Valve Type    |
|  evcloud.200     | Cooling Energy                        | Cooling_E_J               | 2.9623251385726845E10 | Cooling Ene   |
|  evcloud.180     | Setpoint DeltaT                       | SpDeltaT_applied_K        | 10.0                  | Applied Setp  |
|  evcloud.170     | Delta T Limitation Type               | DeltaT_Limitation_Write   | V2                    | Delta T Limit |
|  evcloud.190     | Delta Temperature                     | DeltaT_K                  | 24.329999999999984    | Delta Tempe   |
|  evcloudplus.384 | Delta T Manager Active                | Active_dT_Manager_total_h | 1644.6273239298453    | while_DDC_!   |
|  evcloud.80      | Relative Position                     | RelPos_Fb                 | 52.49                 | Relative Pos  |

Database

| Name | Type | Out | Pointid | Can Write |
|------|------|-----|---------|-----------|
|------|------|-----|---------|-----------|

New Folder New Edit Discover Cancel

## Data Points added

- Added points are visible on Nav Tree too.

The screenshot displays the Belimo Digital Ecosystem interface. On the left is the 'Nav Tree' (Navigation Tree) showing a hierarchical structure of components. The 'BelimoloTDevice' is selected, and its sub-items, 'SpDeltaT\_applied\_K' and 'DeltaT\_K', are visible under the 'Points' category. On the right, the 'BelimoIoT Discovery' section shows two tables: 'Discovered' and 'Database'.

**Discovered Table:**

| Pointid         | Point Caption                         | Point Name      |
|-----------------|---------------------------------------|-----------------|
| evcloud.00009   | Valve Type (0=2-way EV3, 1=3-way EV3) | ValveType       |
| evcloud.200     | Cooling Energy                        | Cooling_E_J     |
| evcloud.180     | Setpoint DeltaT                       | SpDeltaT_appli  |
| evcloud.170     | Delta T Limitation Type               | DeltaT_Limitati |
| evcloud.190     | Delta Temperature                     | DeltaT_K        |
| evcloudplus.384 | Delta T Manager Active                | Active_dT_Man   |
| evcloud.80      | Relative Position                     | RelPos_Fb       |

**Database Table:**

| Name               | Type           | Out       | Pointid     | Can Write |
|--------------------|----------------|-----------|-------------|-----------|
| SpDeltaT_applied_K | B NumericPoint | 10.0 {ok} | evcloud.180 | false     |
| DeltaT_K           | B NumericPoint | 25.1 {ok} | evcloud.190 | false     |

## Data Point details

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

The screenshot displays the Belimo Digital Ecosystem software interface. The top navigation bar shows the current host: CH1NIAGARA1 (BelimoSupervisor), and the active view: Station (BelimoSupervisor) > Config > Drivers > BelimoDigitalEcosystem.

The left sidebar (Nav) shows a hierarchical tree structure. The 'Station (BelimoSupervisor)' folder is expanded, showing sub-items like Alarm, Config, Services, Drivers, NiagaraNetwork, BelimoDigitalEcosystem, Ecosystem Config, Ecosystem Authorization, Ecosystem Resources, Monitor, Tuning Policies, BelimoloTDevice, Alarm Source Info, Points, and SpDeltaT\_applied\_K. The 'SpDeltaT\_applied\_K' item is selected and highlighted in blue.

The right pane (Property Sheet) displays the details for the selected data point, 'SpDeltaT\_applied\_K (B Numeric Point)'. The properties are as follows:

| Property      | Value                                    |
|---------------|--|
| Facets        | units=null,precision=1,min=-inf,max=+inf |
| Proxy Ext     | Belimo Io T Proxy Ext                    |
| Out           | 10.0 {ok}                                |
| Description   | Applied Setpoint DeltaT in K             |
| Point Caption | Setpoint DeltaT                          |
| Pointid       | evcloud.180                              |

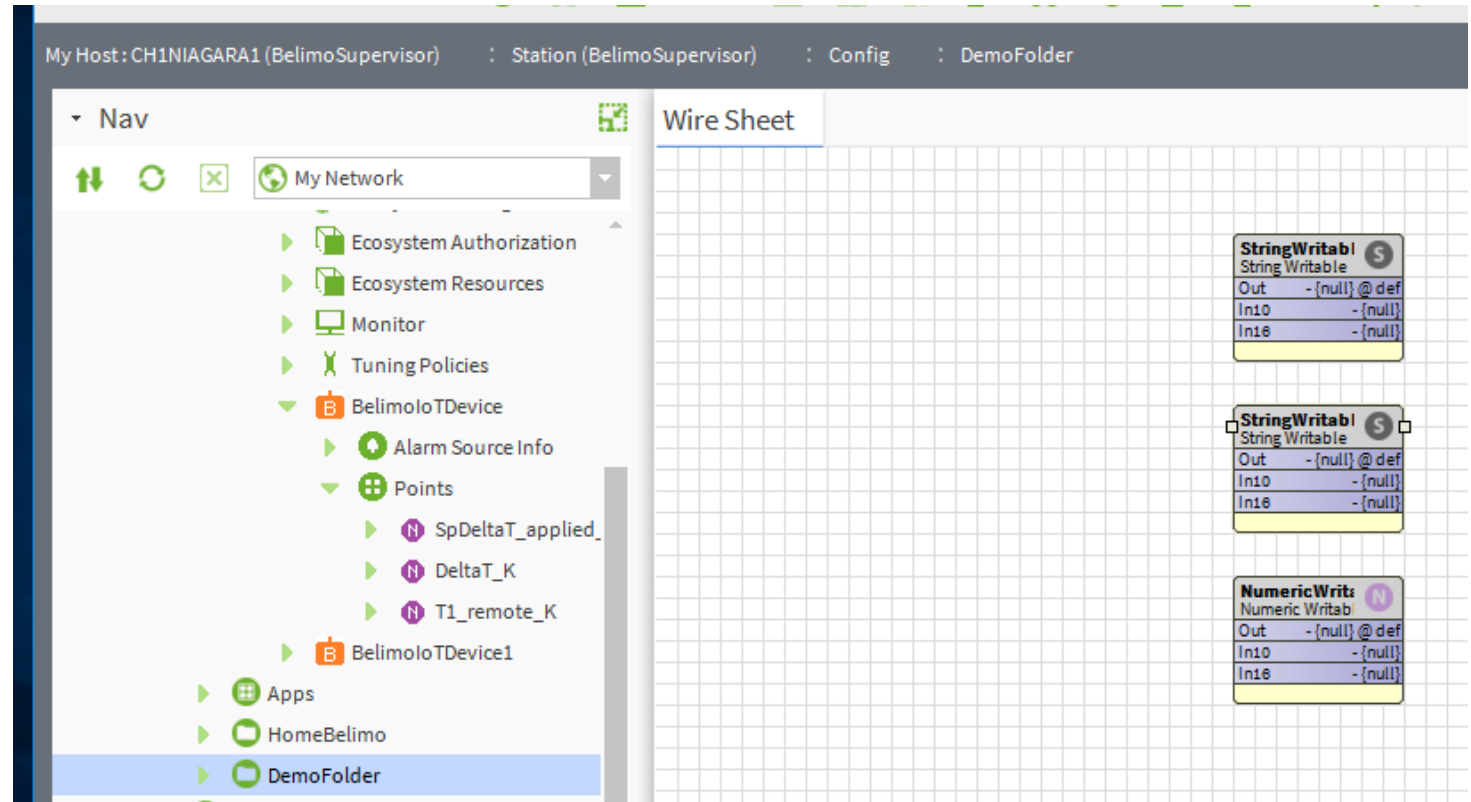
# Binding

---

Next steps show how to bind  
point value to local variables

## Demo folder sheet

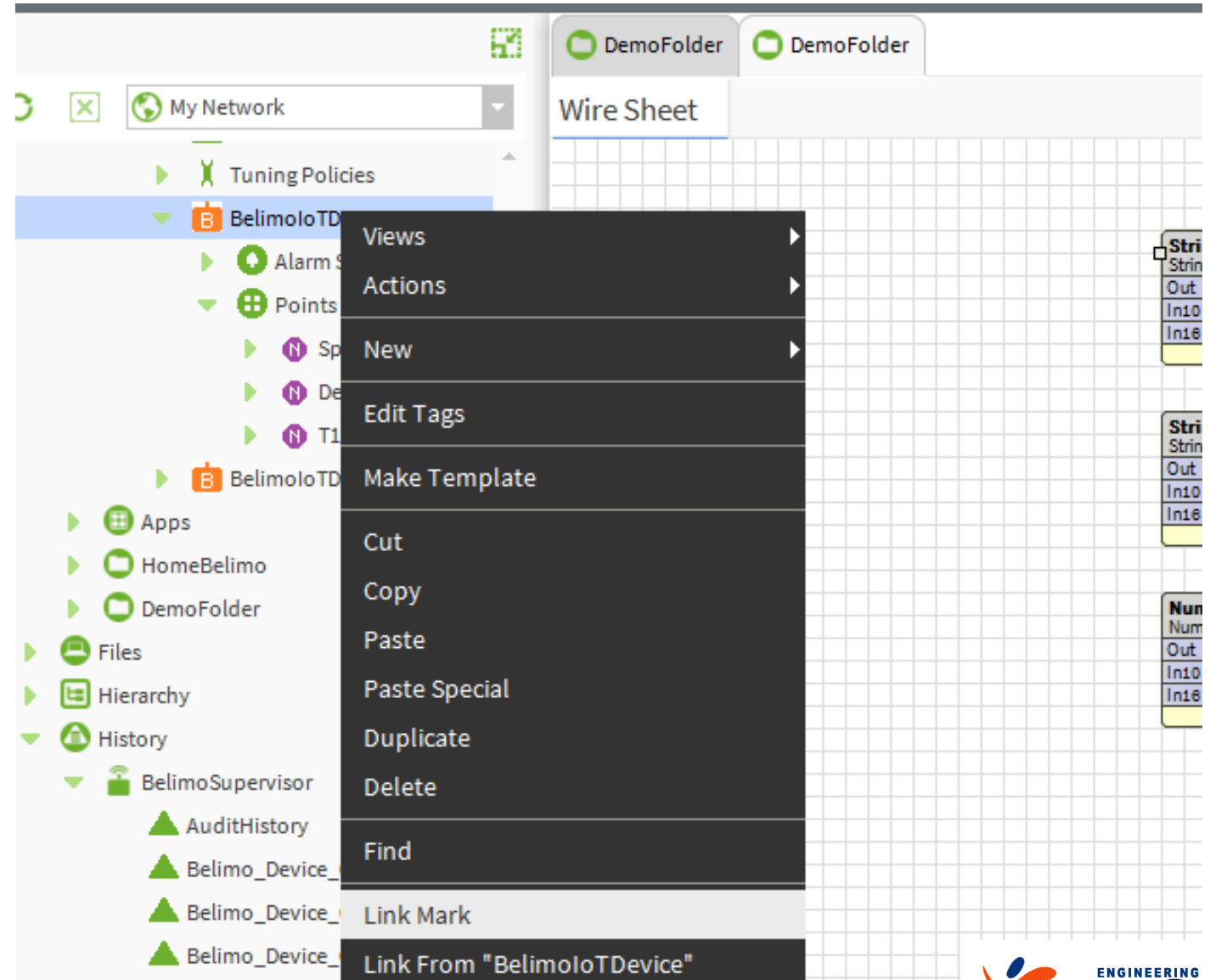
- Create a folder, here for sample purposes is named 'DemoFolder'.
- Open the Sheet view
- Add on the sheet two string writable object
- Add on the sheet on numeric writable object





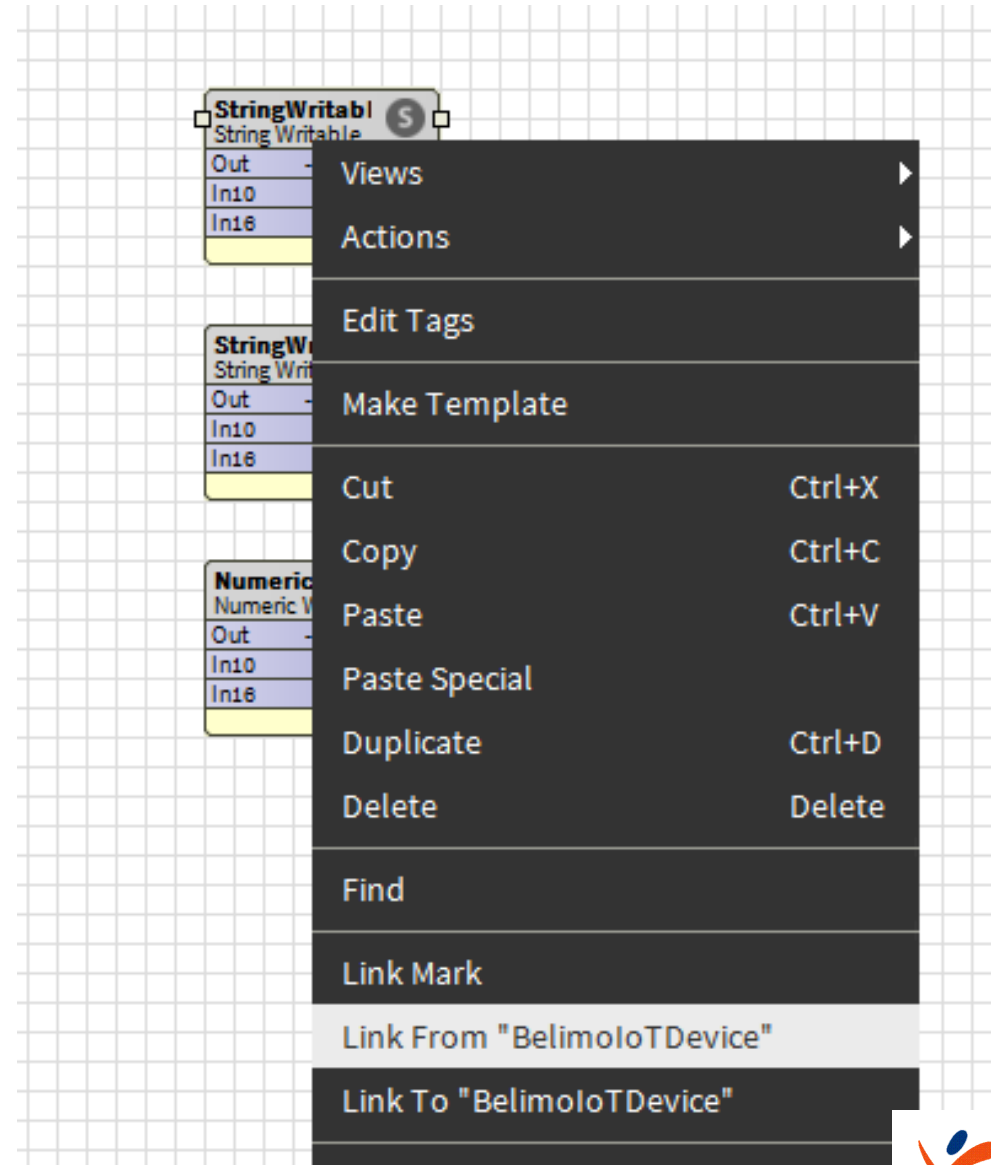
## Bind from device

- Select the device and perform Link mark



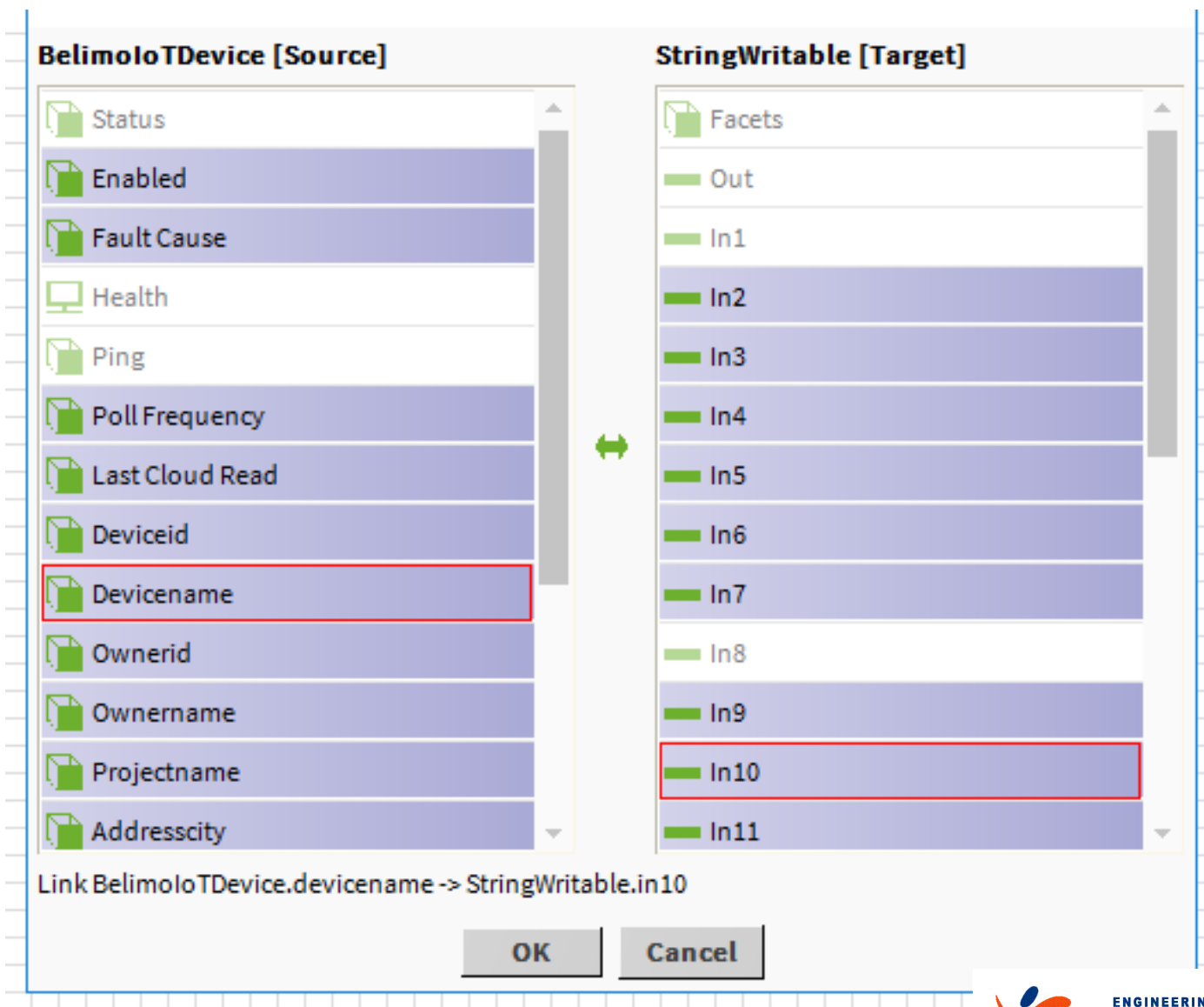
# Bind from device

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



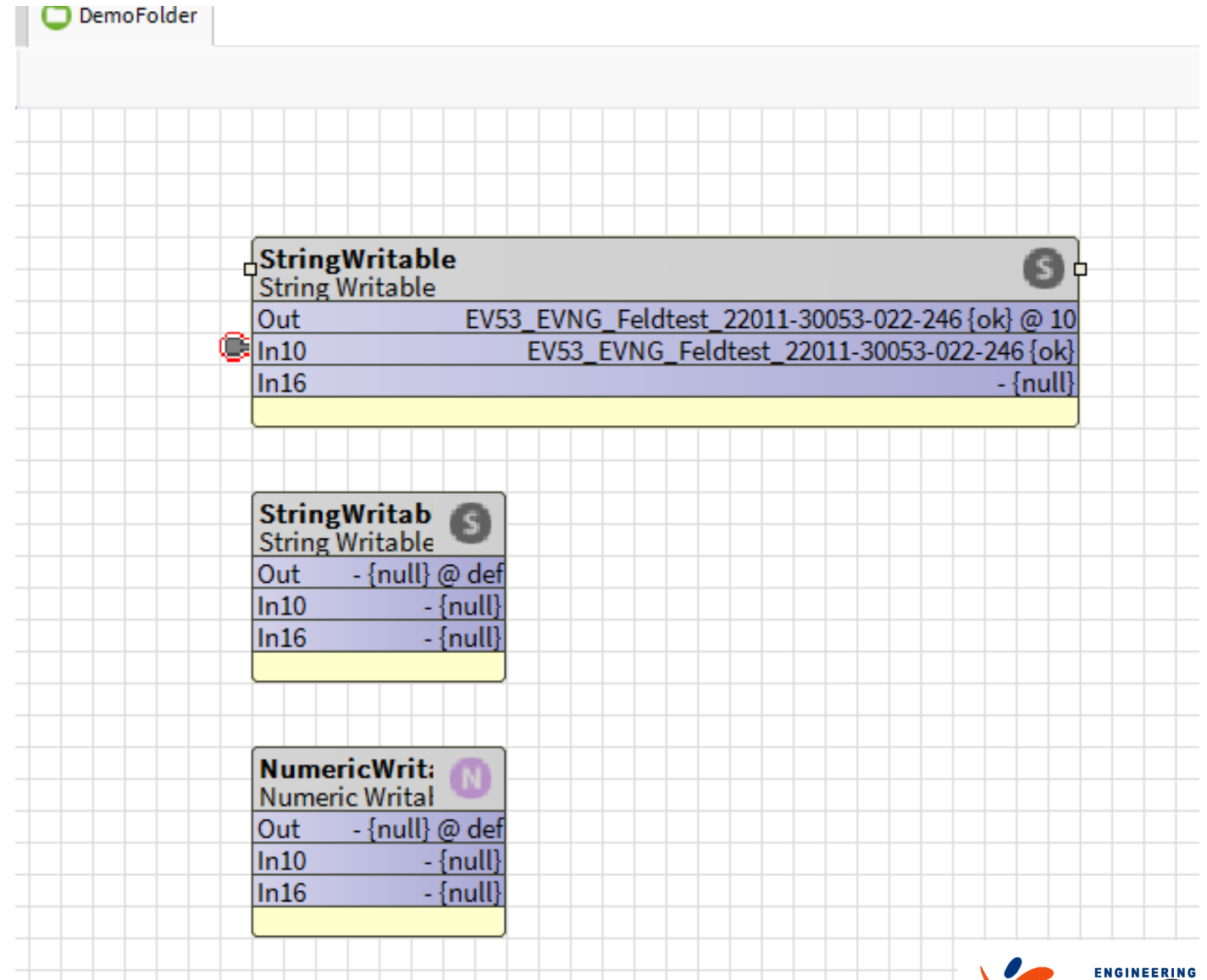
## Bind from device

- Select source and target of binding as in the example



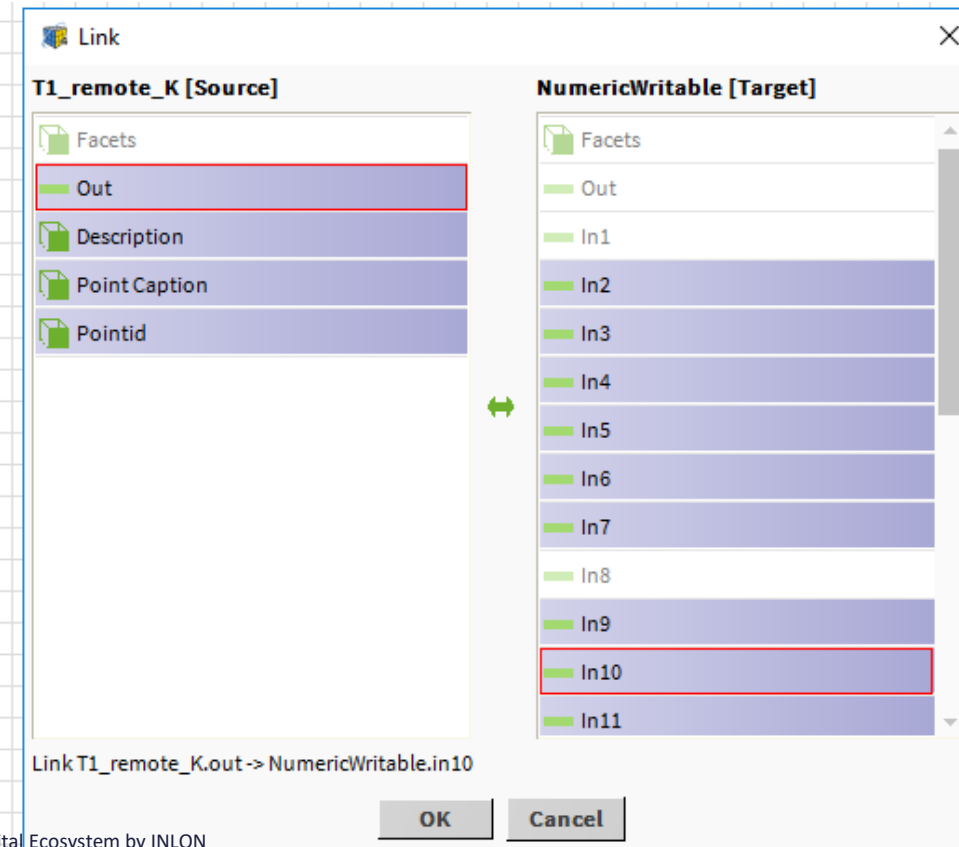
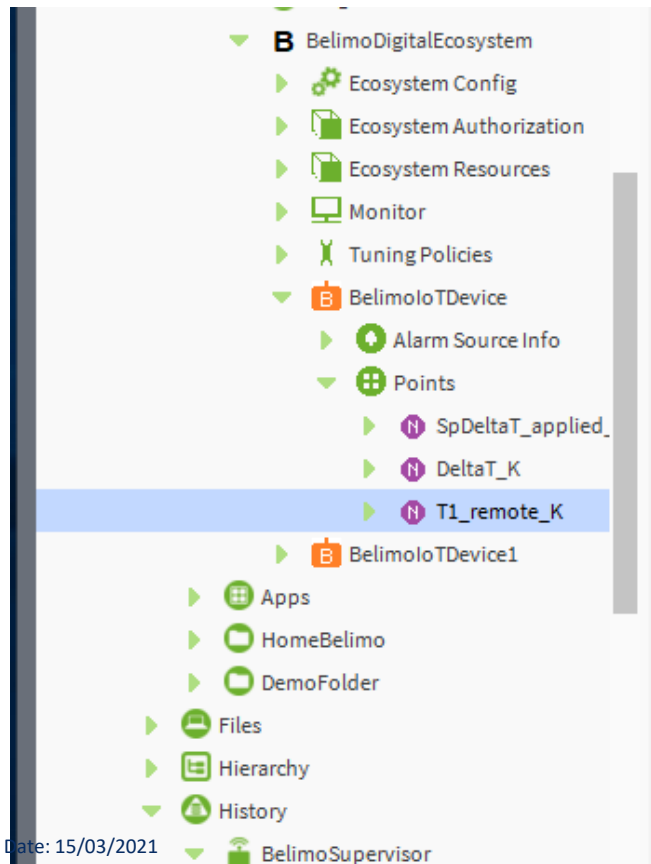
## Devicename bind

- Now device name is available as variable



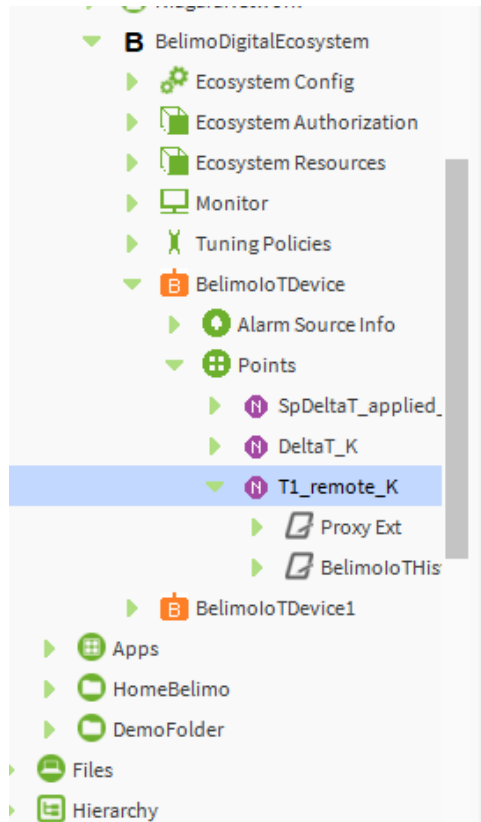
# Data Point value

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

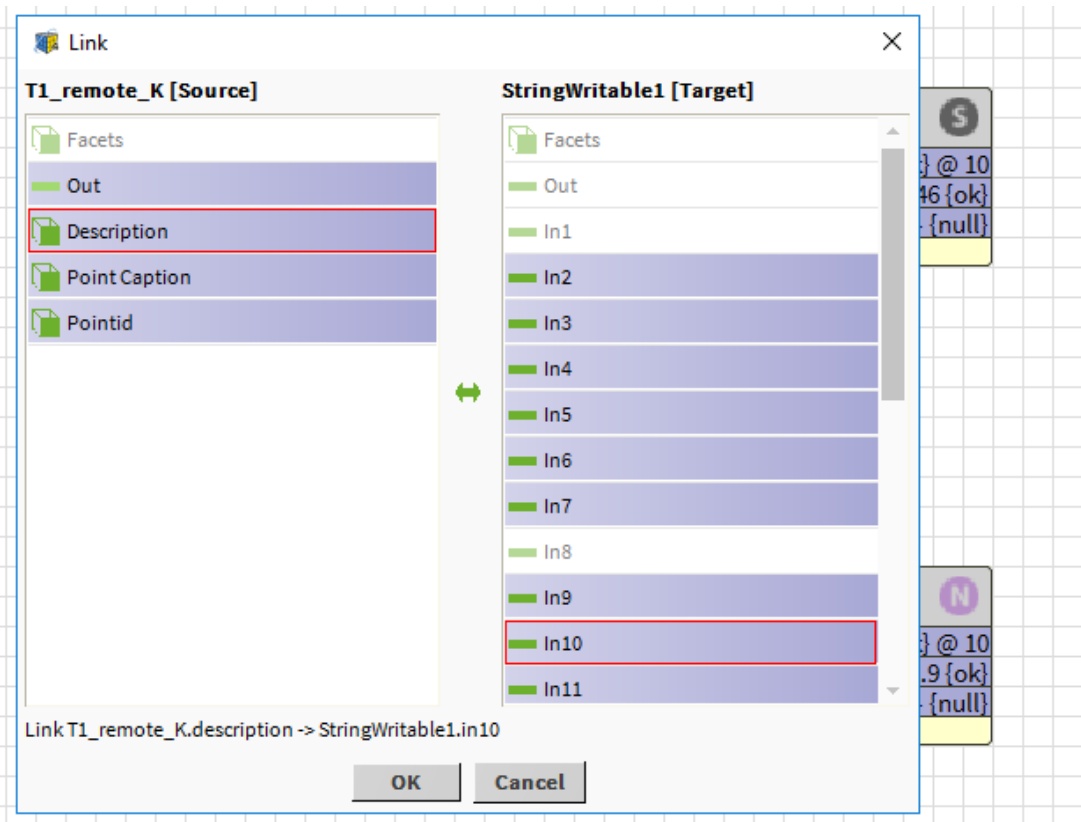


# Data Point description

- Perform the same operation marking for link a point description



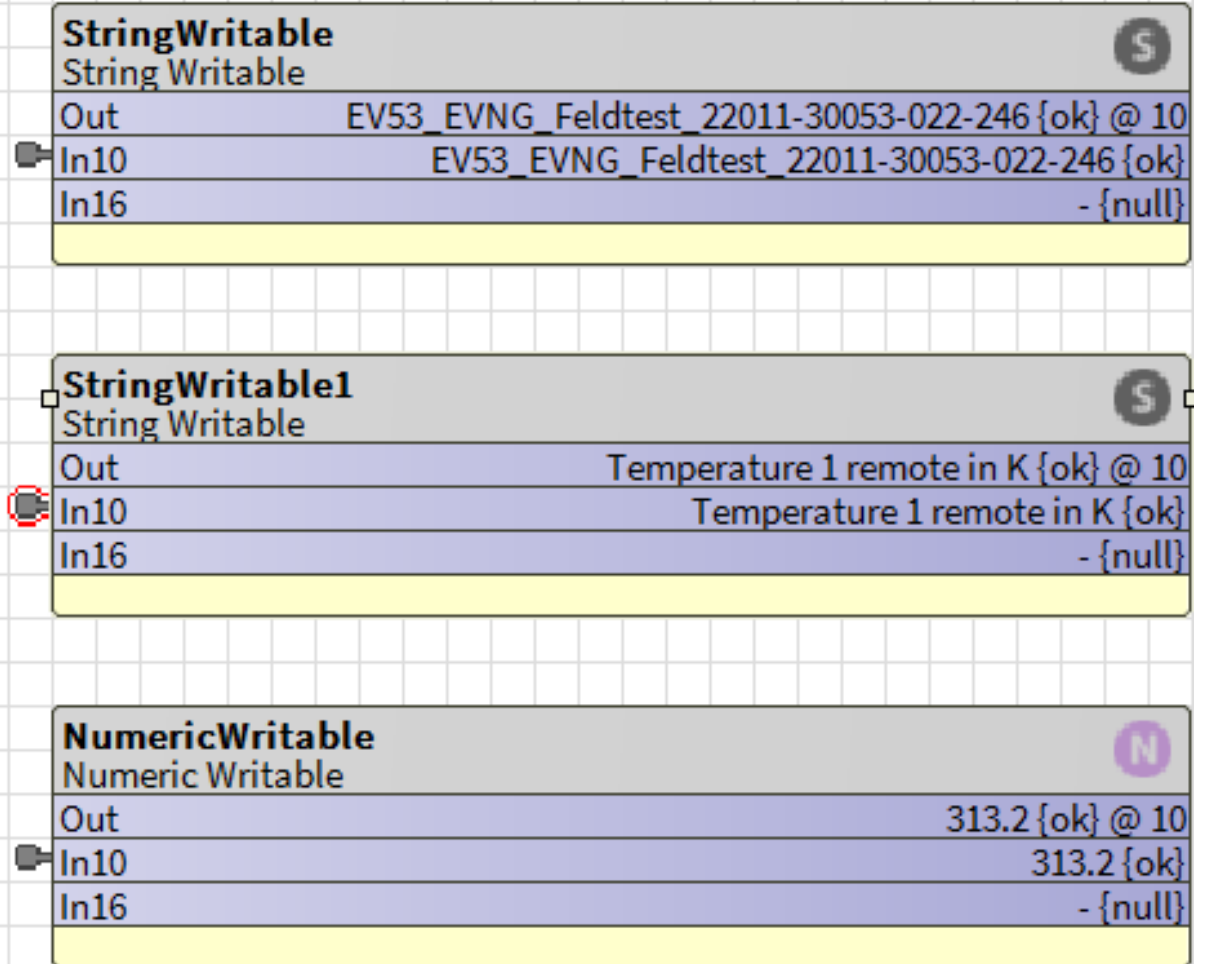
Date: 15/03/2021



Belimo Digital Ecosystem by INLON

## Variable bind

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



# History

---

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



- 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



## History activation

- Enable the history.
- After this operation an history is created.
- Data will be available from the cloud only after time of activation.
- The point value is stored only by the cloud.
- If you want to store point value locally use the common history extension.

### Property Sheet

T1\_remote\_K (B Numeric Point)

|                     |  |      |
|---------------------|--|------|
| Facets              | units=null,precision=1,min=-inf,max=+inf               | >> ⌚ |
| Proxy Ext           | Belimo Io T Proxy Ext                                  |      |
| Out                 | 310.9 {ok}   |      |
| Description         | Temperature 1 remote in K                              |      |
| Point Caption       | Temperature 1 remote                                   |      |
| Pointid             | evcloud.150  |      |
| BelimoloTHistoryExt | Belimo Io T History Ext                                |      |
| Status              | {ok}   |      |
| Fault Cause         |  |      |
| Enabled             | <input checked="" type="radio"/> true                  |      |
| Active              | <input checked="" type="radio"/> true                  |      |
| History Name        | Belimo_\${parent.parent.parent.name}_\${parent.name} ? |      |
| History Config      | Interval: 15 minutes, Record Type: nume...             |      |
| Last Record         | null <input type="checkbox"/> Hidden                   |      |
| Interval            | 00000h 15m 00s [1ms-+inf]                              |      |
| Upload From         | 17-Feb-2021 03:18 PM CET                               |      |
| Last Upload         | null   |      |

## Access to history

- Expand the History Config node and look at the Id

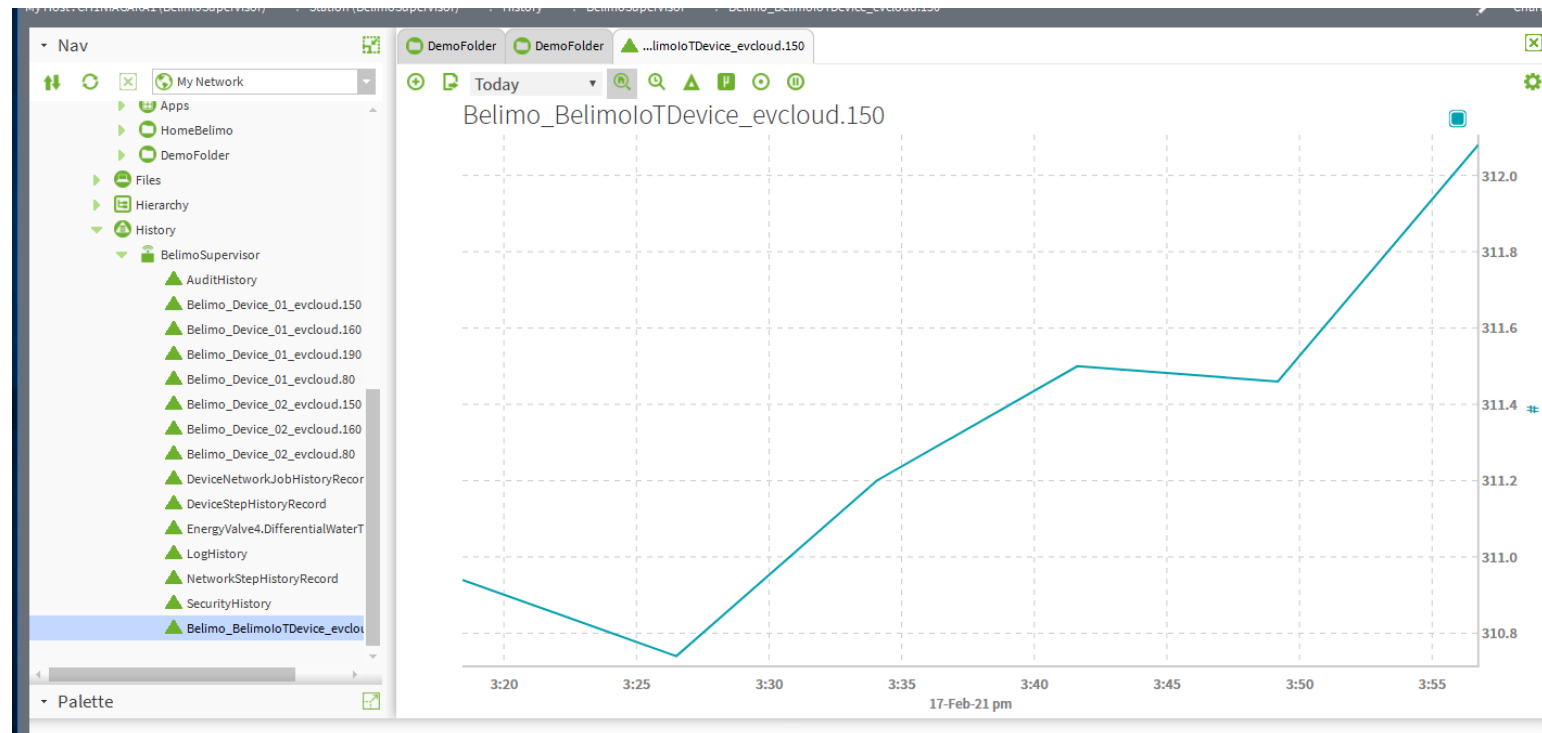
Property sheet

BelimoloTHistoryExt (Belimo Io T History Ext)

|                |  |
|----------------|--|
| Status         | {ok}   |
| Fault Cause    |  |
| Enabled        | <input checked="" type="radio"/> true                |
| Active         | <input checked="" type="radio"/> true                |
| History Name   | Belimo_%parent.parent.parent.name%_%pare? ?          |
| History Config | Interval: 15 minutes, Record Type: nume...           |
| Id             | /BelimoSupervisor/Belimo_BelimoloTDevice_evcloud.150 |
| Source         | station: slot:/Drivers/BelimoDigitalEcosystem/Beli   |
| Time Zone      | Europe/Berlin (+1/+2)                                |
| Record Type    | history NumericTrendRecord                           |
| Capacity       | Record Count 500 [0 - max] records                   |
| Full Policy    | Roll   |
| Interval       | regular +00000h 15m 00s                              |
| System Tags    |  |
| valueFacets    | units=null,precision=1,min=-inf,max=+inf >> ?        |
| Last Record    | null <input type="checkbox"/> Hidden                 |
| Interval       | 00000h 15m 00s [1 ms - +inf]                         |
| Upload From    | 17-Feb-2021 03:18 PM CET                             |
| Last Upload    | null   |

# Access to history

- 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



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You can download from:  
[github.com/inlon-engineering/niagara-belimo-iot](https://github.com/inlon-engineering/niagara-belimo-iot)

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