CENTRALINE NX
BACNET UTILITIES DRIVER

User Guide

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EN2Z-1020GE51 R0418

CENTRALINE NX BACNET UTILITIES DRIVER 4.4.xx

USER GUIDE

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SYSTEM REQUIERMENTS

Niagara

Niagara 4.4.xx and higher.

Products and OS Numbers

For detailed information on the applicable controllers including their OS Numbers, and licenses, please download the corresponding, product data, software release bulletin and/or the compatibility matrix available at:

Product Data
http://products.centraline.com/en/

Software Release Bulletin
https://www.centraline.com/partnerweb/index.php?id=847&route=article%2Findex&directory_id=47&direct_link=1

Compatiblility Matrix
https://clfaq.ge51.honeywell.de/?action=artikel&cat=70&id=1616&artlang=en

Licenses and Point Handling

When having a license allowing only a limited number of points and you are deleting points, the free number points are not available instantly. To make the free number of points available again, please restart the station.

INSTALLATION

Procedure

1. Unzip the CentraLine NX software to the desired location on your hard disk.
2. Expand the CentraLine NX installation folder.
3. Right-click *setup.exe* file for a Win 32-Bit operation system or the *setup_x64.exe* file for a Win 64-Bit operating system, and then click **Run as Administrator** in the context menu.

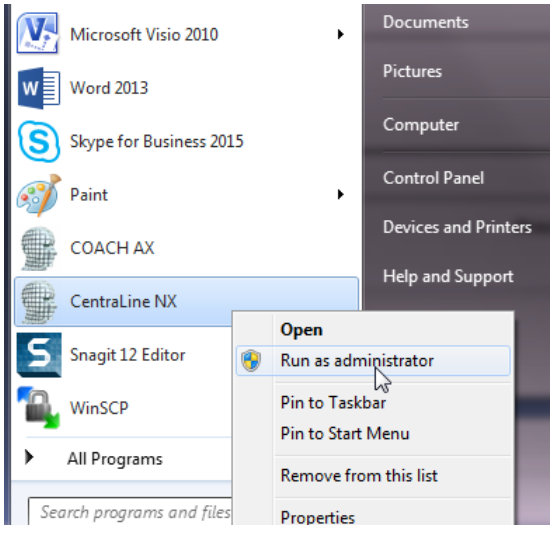
   RESULT: The CentraLine *NX Installation Wizard* starts.
4. Click **Next >** and follow the installation instructions.

   RESULT: After the installation is finished, the CentraLine *NX* software has been installed according to your selected settings during the setup.

START CENTRALINE NX

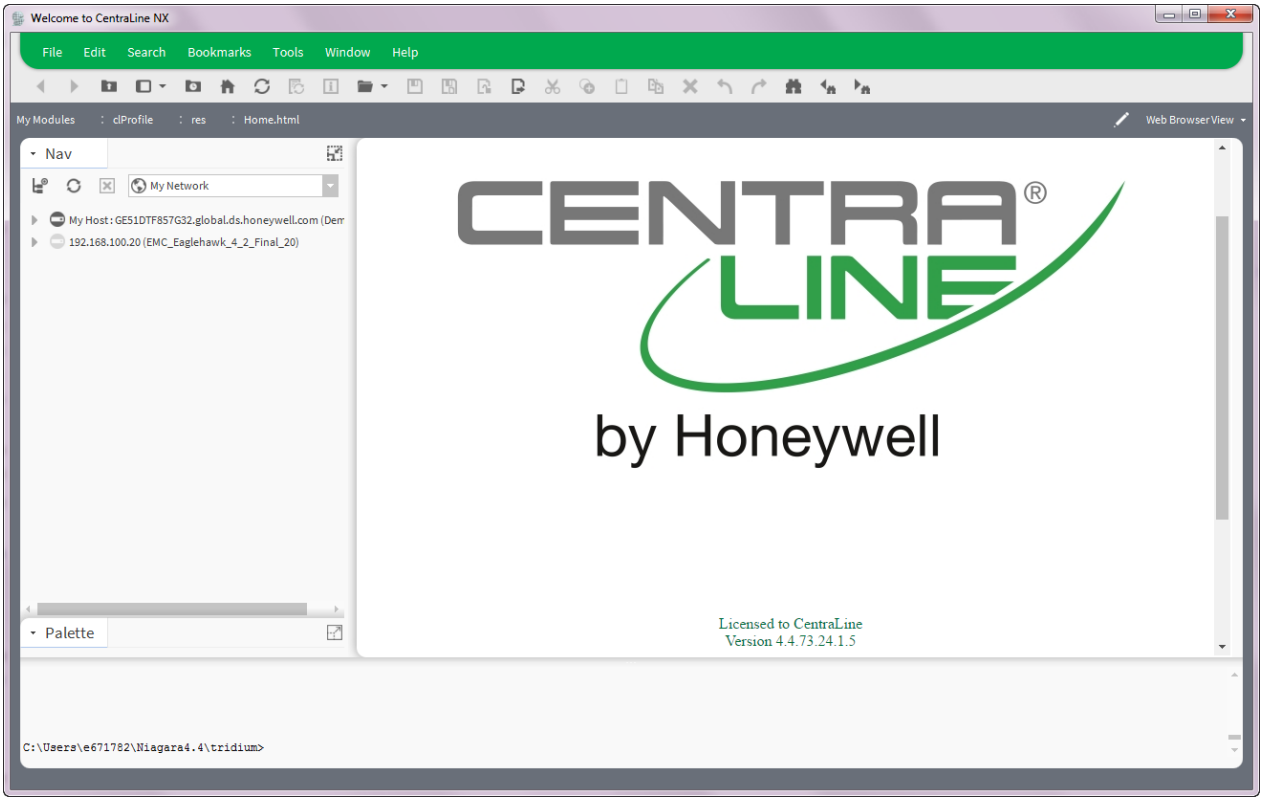
Procedure

1. In the Windows *Start* menu, right-click on **COACH NX**, and then click **Run as administrator** in the context menu, or simply click on **COACH NX**.



2. Click **Yes** in the *User Account Control* dialog box.

RESULT: The CentraLine NX main window displays.



Alternate Usage of Different CentraLine NX Versions on Same PC

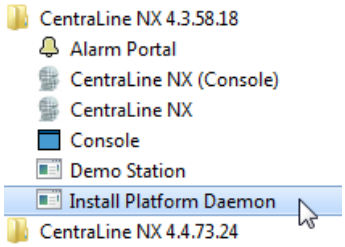
If you have different CentraLine AX and/or NX versions installed on your PC and you want to use them alternately, each time before you start the CentraLine NX software, you must install its dedicated platform daemon. This is necessary in order to make sure that all necessary services are properly running when using the software.

Alternate Usage of Different ARENA NX / COACH NX Versions on Same PC

If you have different ARENA NX / COACH NX versions installed on your PC and you want to use them alternately, each time before you start the ARENA NX / COACH NX software, you must install its dedicated platform daemon.
This is necessary in order to make sure that all necessary services are properly running when using the software.

NOTE: For ARENA NX / COACH NX 4.4.xx which will be installed via setup, the dedicated platform daemon is automatically installed and the corresponding services are running, as long as you do not start another ARENA NX / COACH NX version.

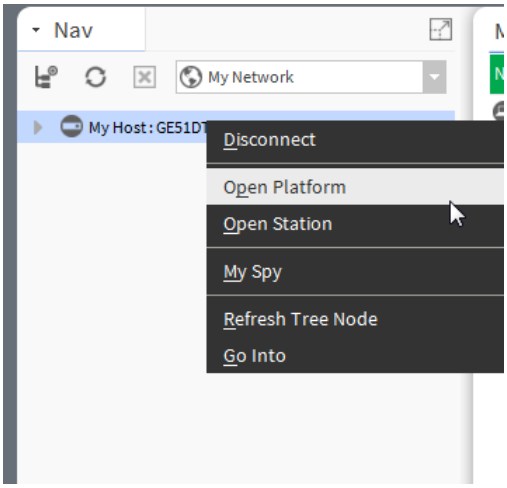
Example: You worked with ARENA NX / COACH NX 4.4.76 and you want to use the previous COACH NX 4.3.58 version. Prior to software start, click the **Install Platform Daemon** entry in the *CentraLine* COACH NX 4.3.58 program group.



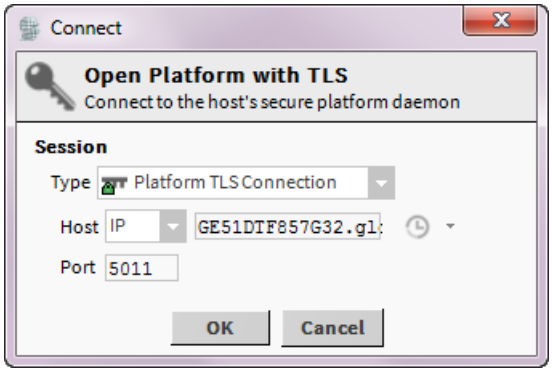
OPEN PLATFORM

Procedure

1. In the *Nav* side bar, right-click on **My Host** and then click **Open Platform** in the context menu.

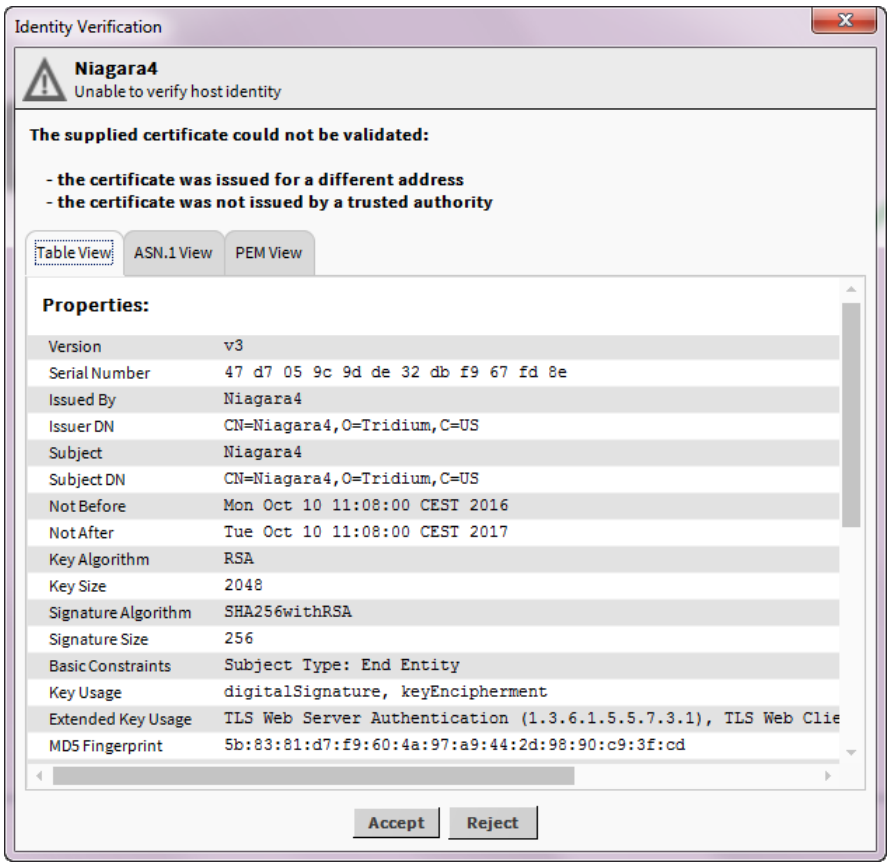


RESULT: The *Connect* dialog box displays.

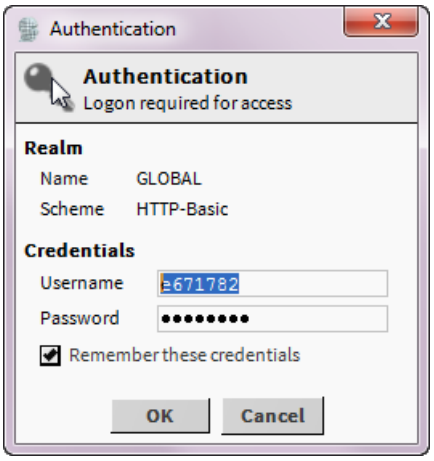


2. In **Type**, select the secure **Platform SSL Connection**, and then click **OK**.

RESULT: If the following message box is displayed, confirm by clicking **Accept.**



RESULT: If the *Authentication* dialog box is displayed.

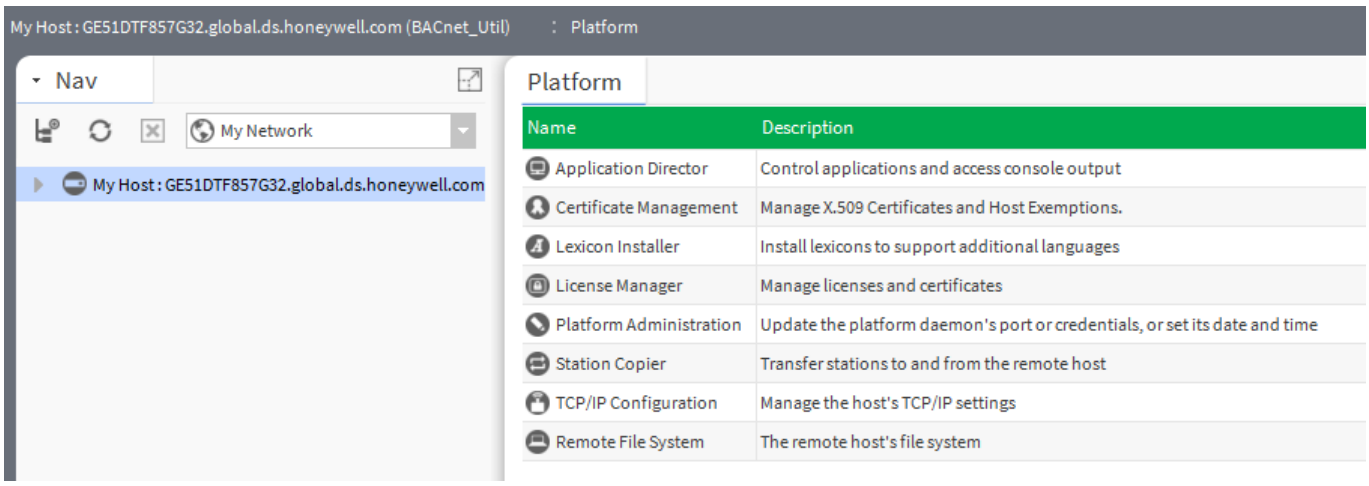


3. In **Username**, enter your Windows account name.
4. In **Password**, enter your Windows account password.

IMPORTANT!
To connect successfully, you must have admin rights as Windows user.

5. Click **OK**.

RESULT: You will be connected to the platform and the utilities of the platform are displayed on the *Platform* pane on the right.



STATION MIGRATION

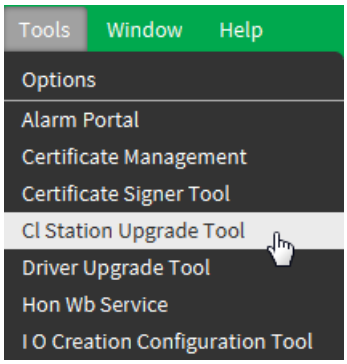
For the re-use of stations created with ARENA AX / COACH AX versions 3.8.111, it is strongly recommend to migrate the stations using the CI Station Upgrade Tool as described in the following.

NOTE: The CI Station Upgrade Tool is specifically designed for the user-friendly migration of CentraLine stations. During this process, some Niagara procedures are executed in the background which are described in detail in the AX to NX Migration User Guide, EN2Z-1025GE51. These procedures can be applied by advanced users if separate manual migration is desired.

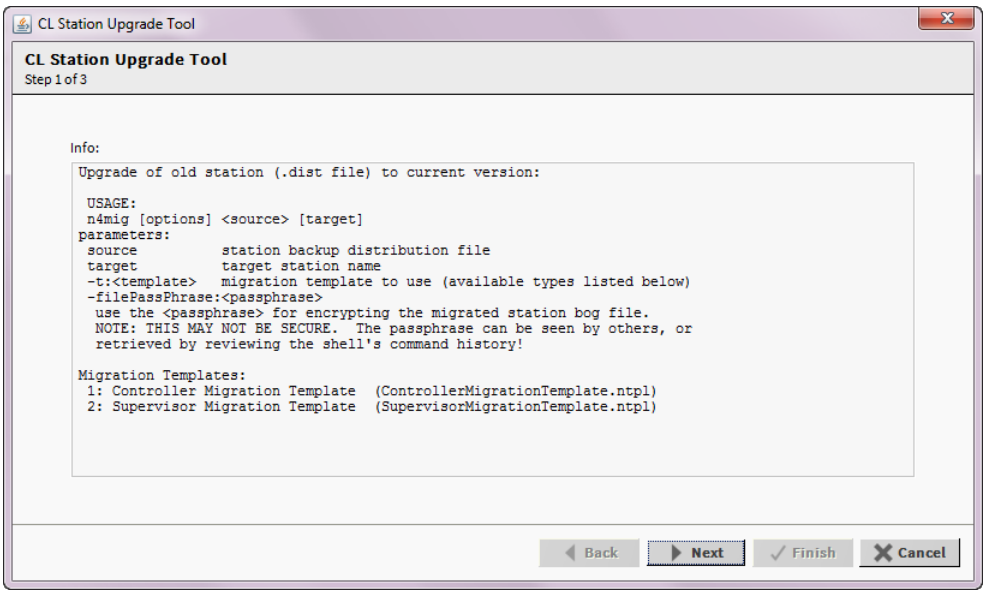
It is strongly recommended **not** to apply both migration methods in parallel.

Procedure

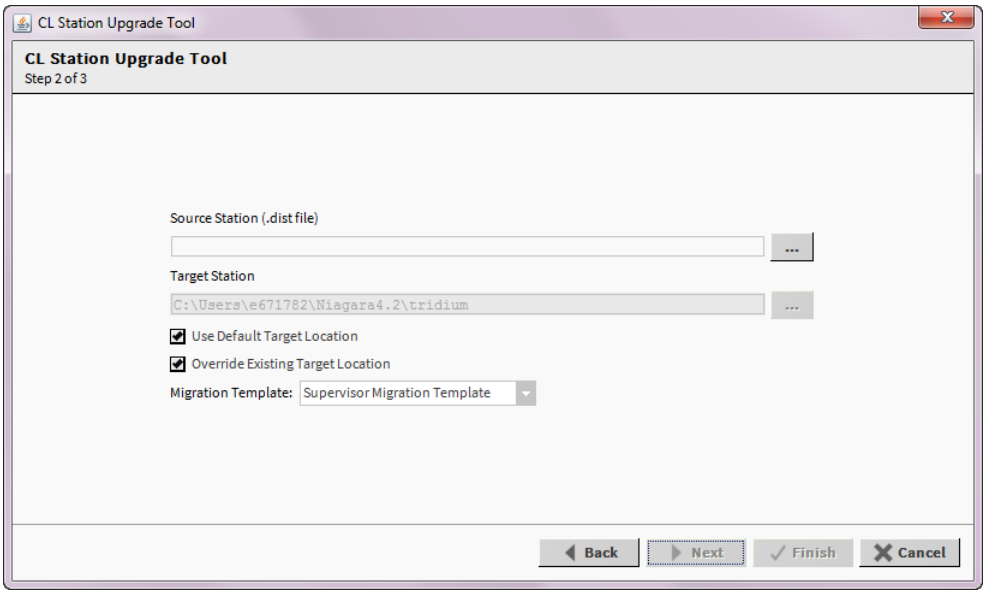
1. In the **Tools** menu, click on **CI Station Upgrade Tool**.

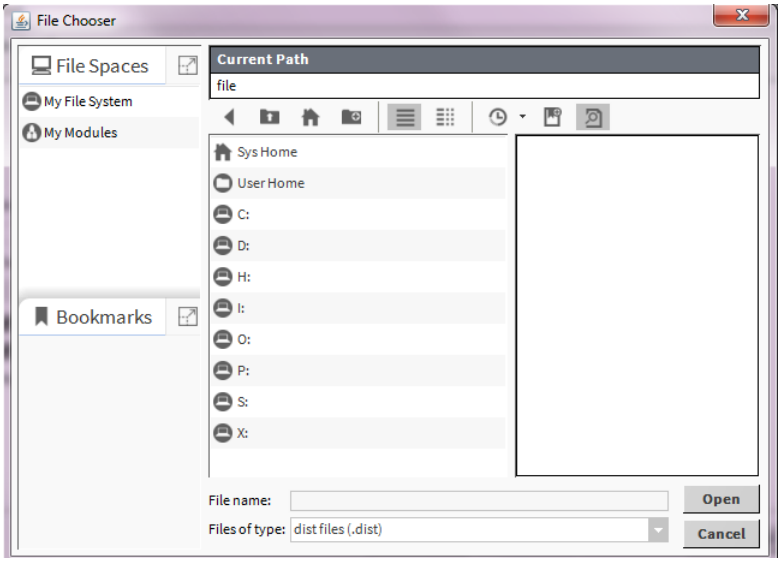


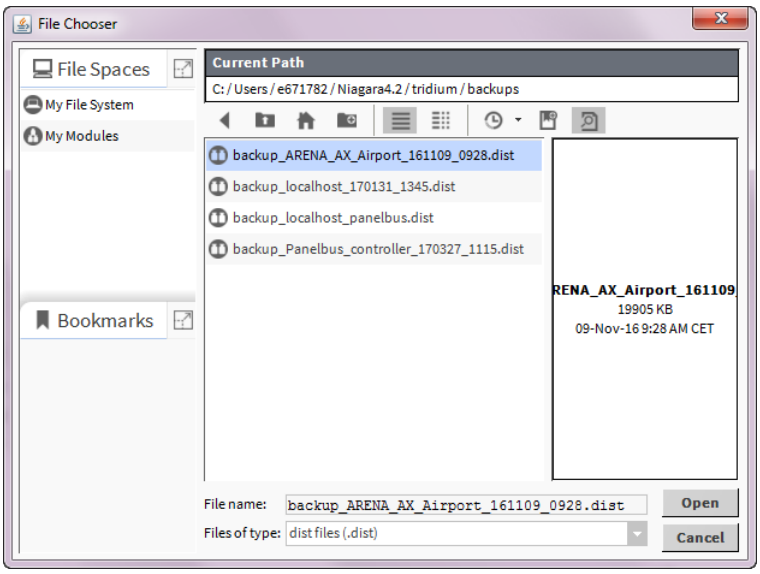
RESULT: The *CI Station Upgrade Tool* wizard is invoked.

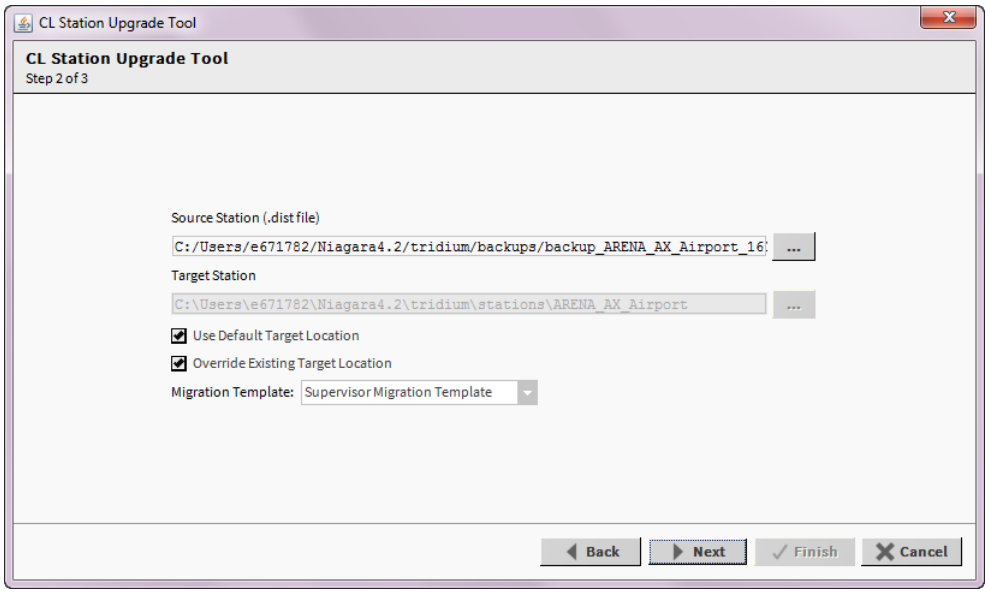


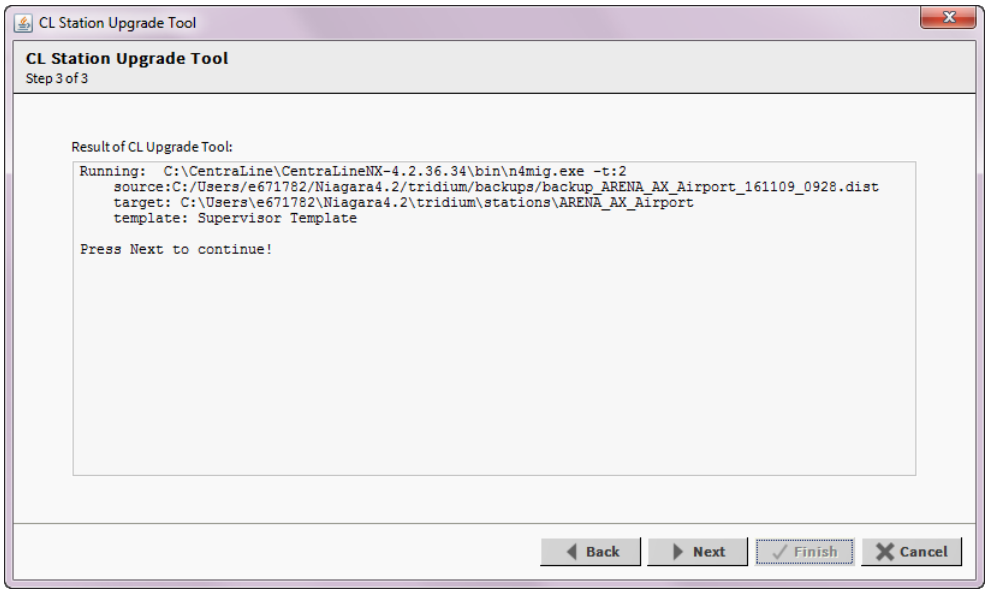
2. In the subsequent dialog boxes, select the desired options and confirm each action by clicking the **Next** button.



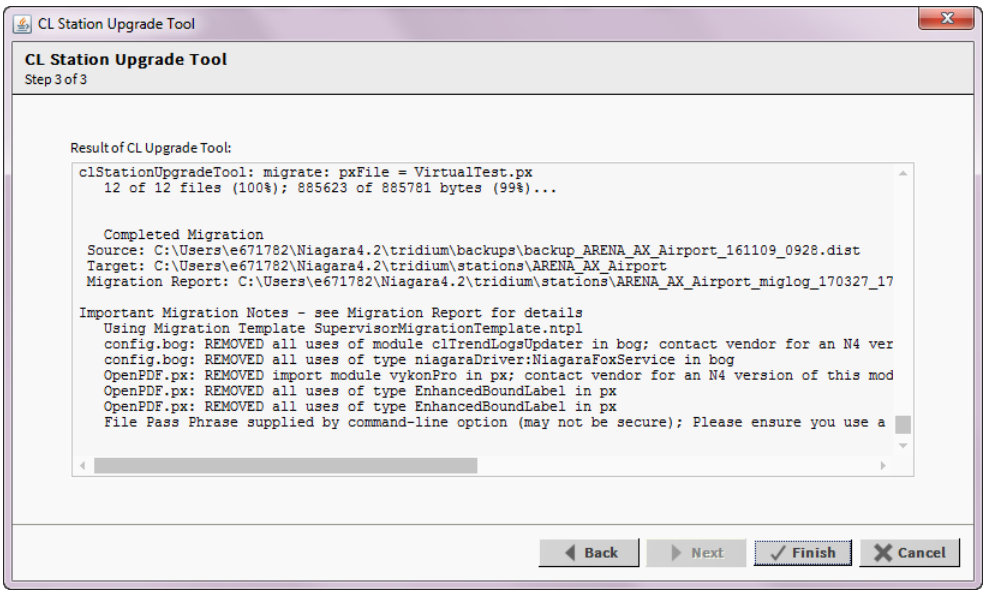








3. Click **Finish** to complete the migration and exit the Cl Station Upgrade Tool.



4. In order to allow running the station, start the **Station Copier** function and copy the station to the "localhost" location.

   NOTE: During migration, the Cl Station Upgrade Tool assigns the default passphrase **Centraline** (case-sensitive) if sensitive data is included in the migrated station. If a station has no sensitive data included, no passphrase will be assigned.

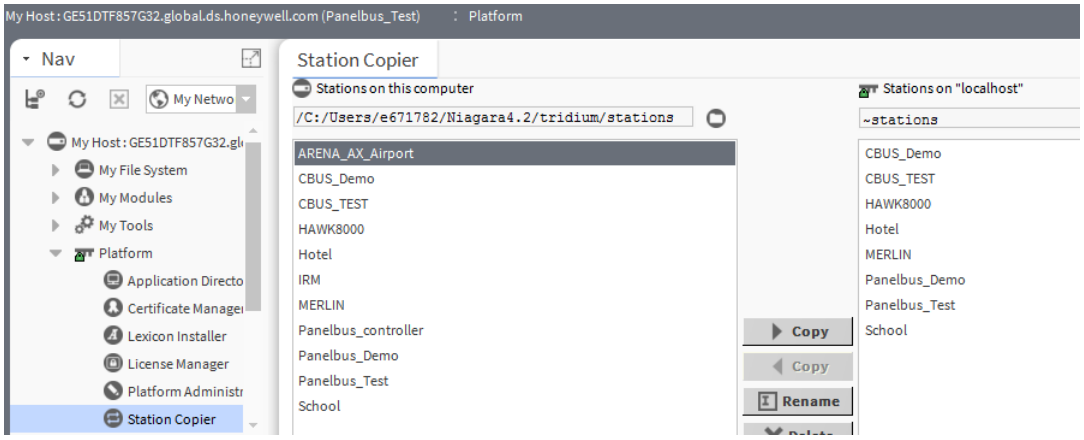
   Sensitive data are, for example, client passwords stored in *.BOG* files and station databases (*CONFIG.BOG* files) or station backup distribution (*.DIST*) files. The following areas of the framework can be affected by passphrase implementation:

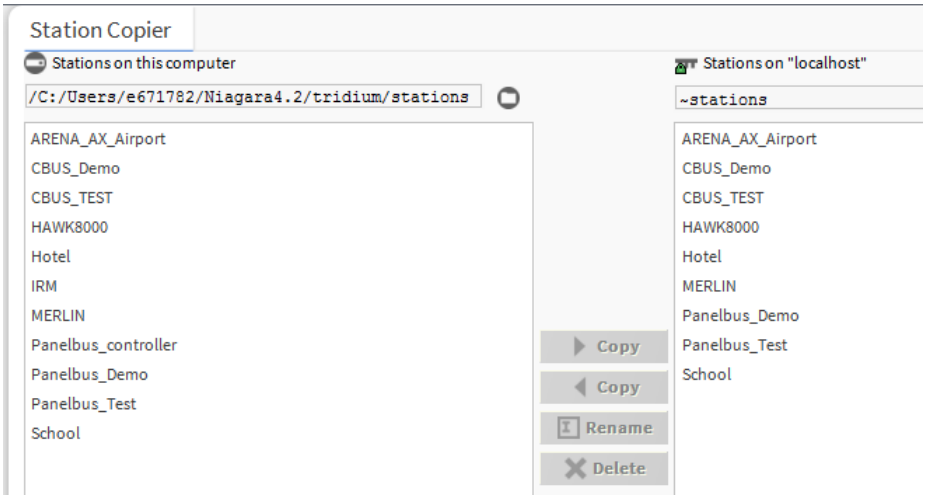
   - Provisioning
   - Distribution File Installer
   - File Transfer Client
   - Station Copier
   - Back up
   - Commissioning
   - Export Tags

   For such a migrated station with sensitive data included, the default passphrase is requested and must be entered when initiating the start of the station by copying it to the "localhost" location.

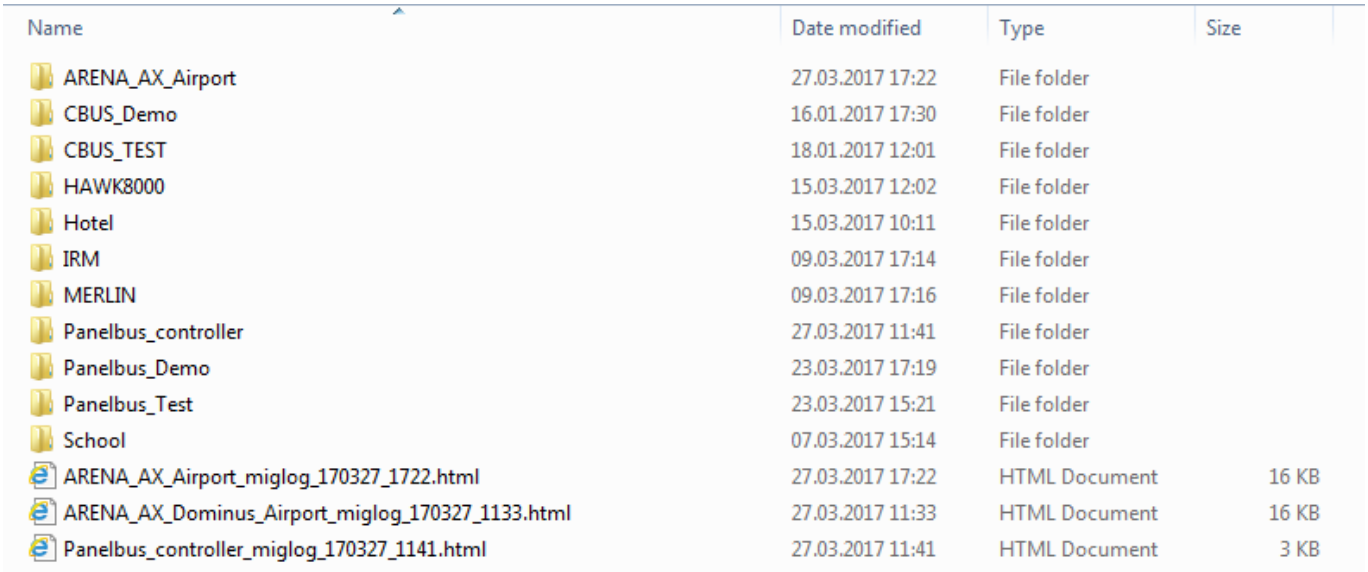
IMPORTANT!

It is strongly recommended to change the default passphrase to a secure one after the migration has been finished.





5. The migration is logged in a report (.HTML file) which can be found at `C:\Users\e671782\Niagara4.3\tridium\stations`. The report shows, for example, which components were deleted.

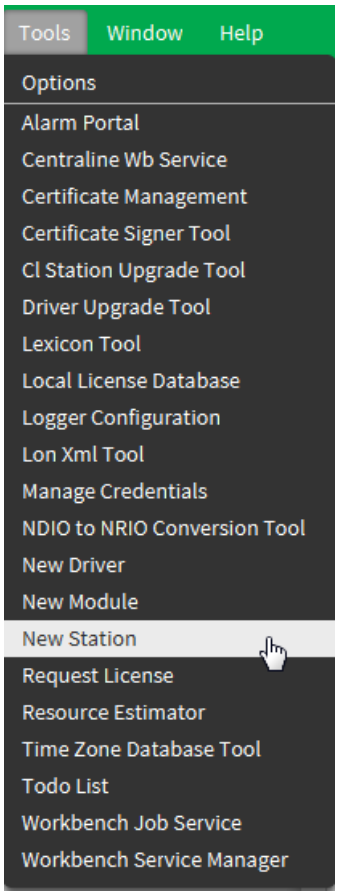


Name	Date modified	Type	Size
ARENA_AX_Airport	27.03.2017 17:22	File folder	
CBUS_Demo	16.01.2017 17:30	File folder	
CBUS_TEST	18.01.2017 12:01	File folder	
HAWK8000	15.03.2017 12:02	File folder	
Hotel	15.03.2017 10:11	File folder	
IRM	09.03.2017 17:14	File folder	
MERLIN	09.03.2017 17:16	File folder	
Panelbus_controller	27.03.2017 11:41	File folder	
Panelbus_Demo	23.03.2017 17:19	File folder	
Panelbus_Test	23.03.2017 15:21	File folder	
School	07.03.2017 15:14	File folder	
ARENA_AX_Airport_miglog_170327_1722.html	27.03.2017 17:22	HTML Document	16 KB
ARENA_AX_Dominus_Airport_miglog_170327_1133.html	27.03.2017 11:33	HTML Document	16 KB
Panelbus_controller_miglog_170327_1141.html	27.03.2017 11:41	HTML Document	3 KB

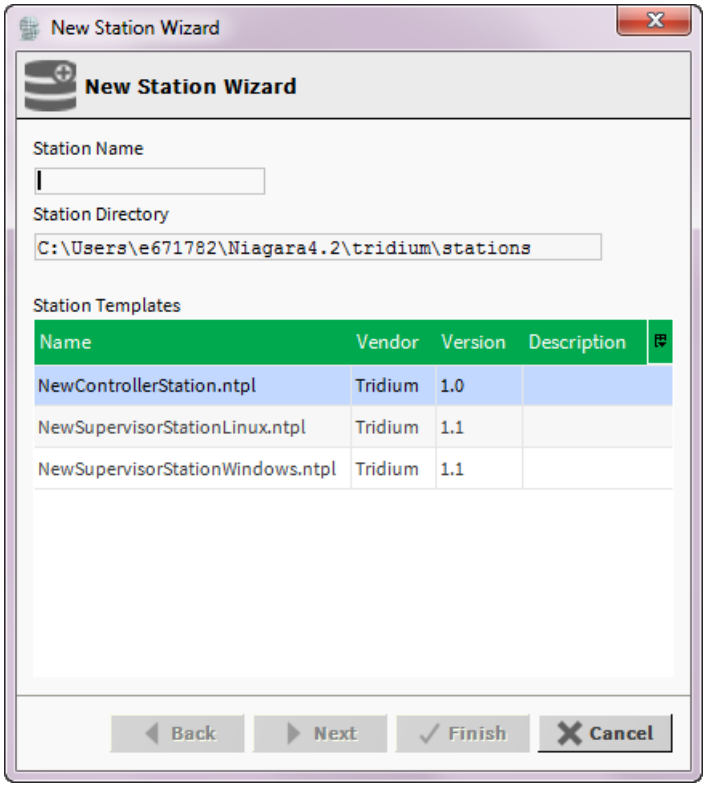
CREATE STATION

Procedure

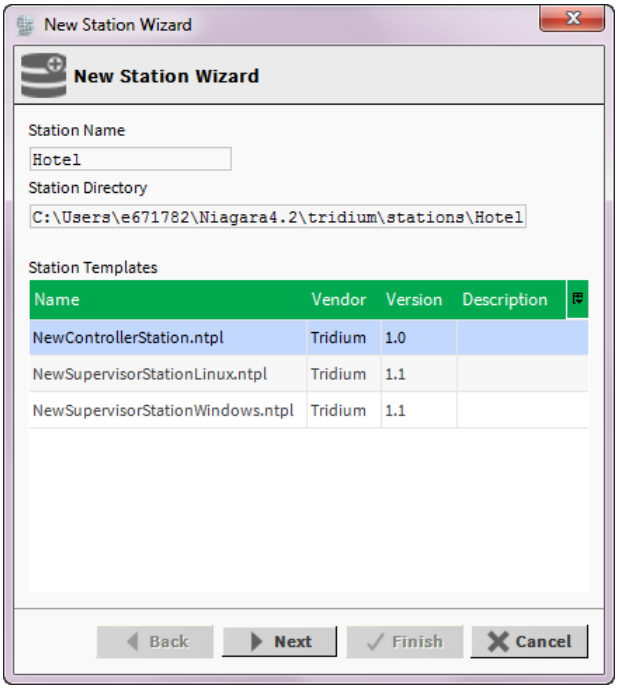
1. From the **Tools** menu, select **New Station**.



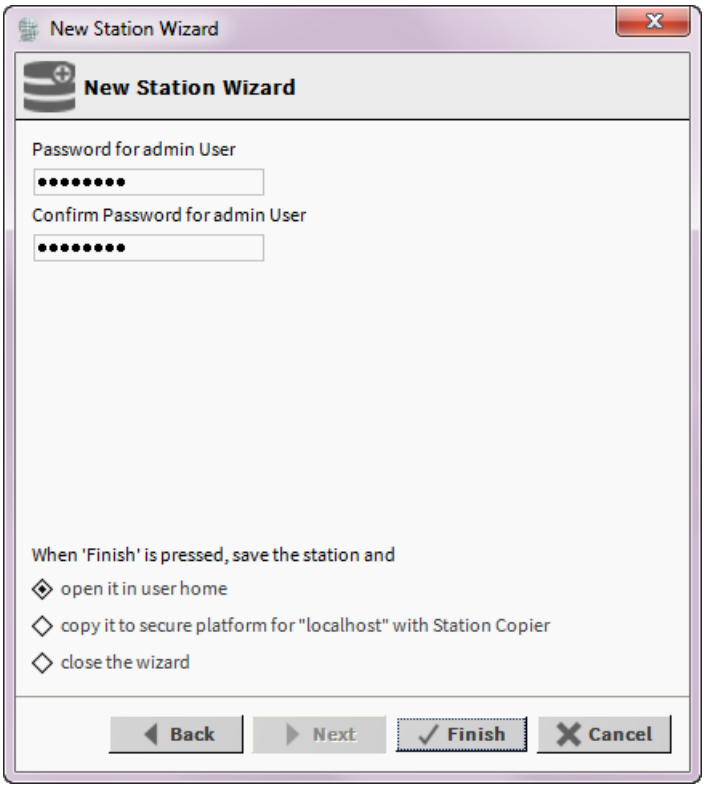
RESULT: The *New Station Wizard* displays.



2. In **Station Name**, enter a name, and under **Station Templates**, select the required template.



3. Click **Next** button.

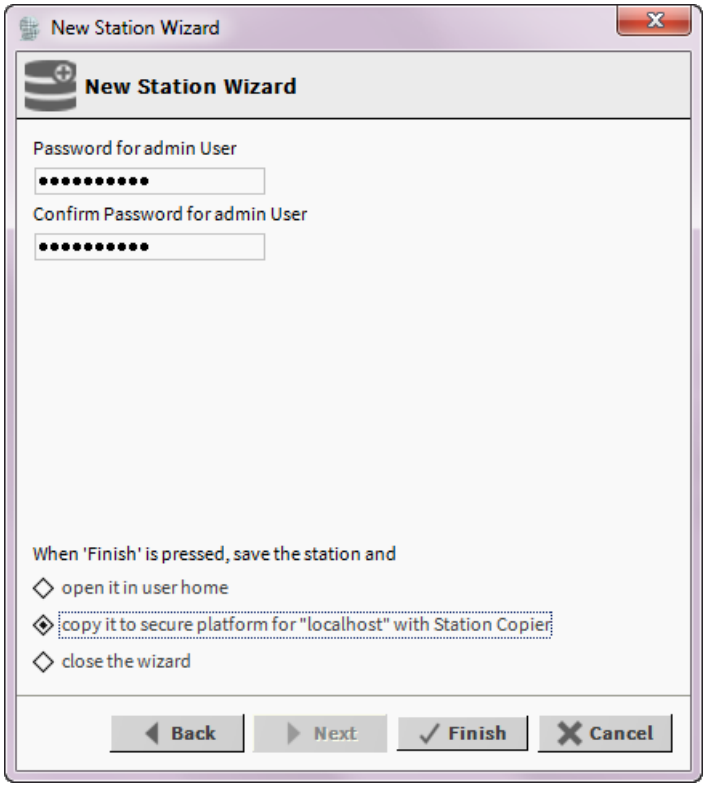


4. In **Password for admin User** and in **Confirm Password for admin User,** enter the administrator password.

5. Under **When ´Finish` is pressed, save the station and,** check any of the following options:

   - open it in user home
     creates the station in the *user home* folder

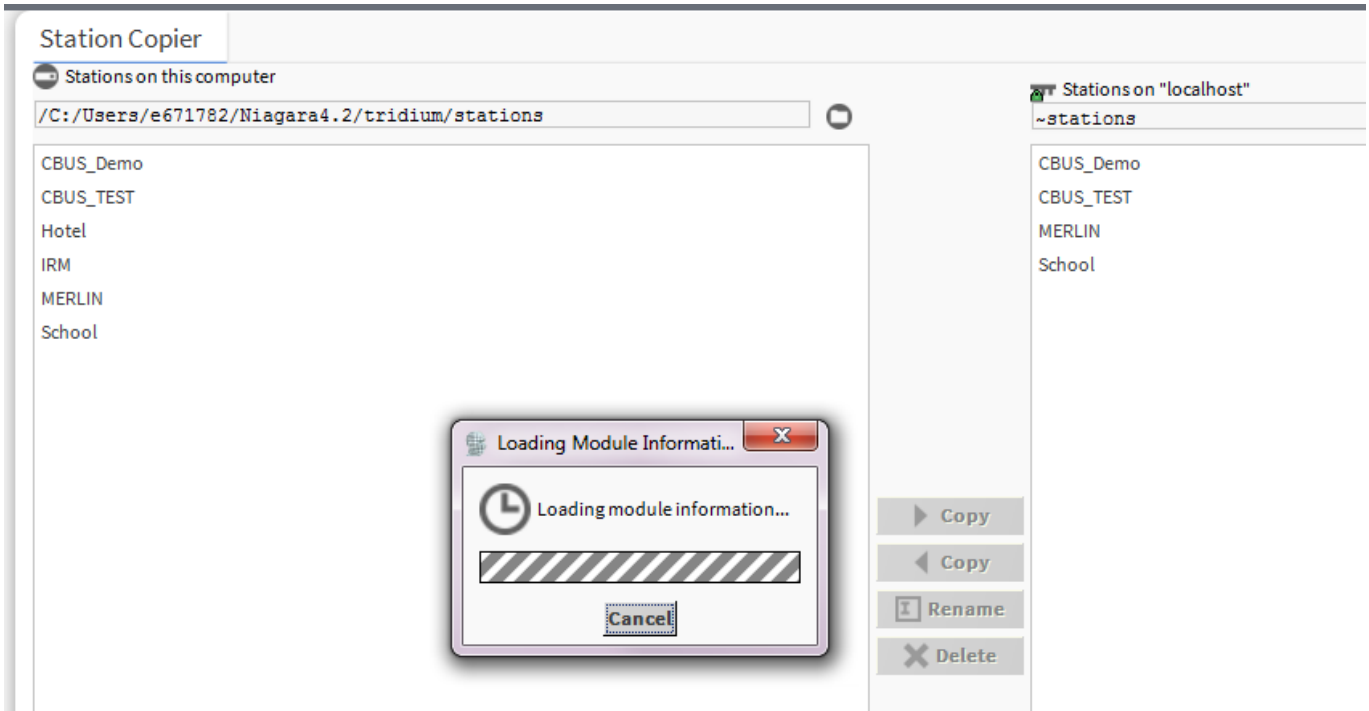
- copy it to secure platform for "localhost" with Station Copier
  copies the station using the station copier function to the *localhost* folder (recommended)
- close the wizard
  creates the station and closes the station wizard.



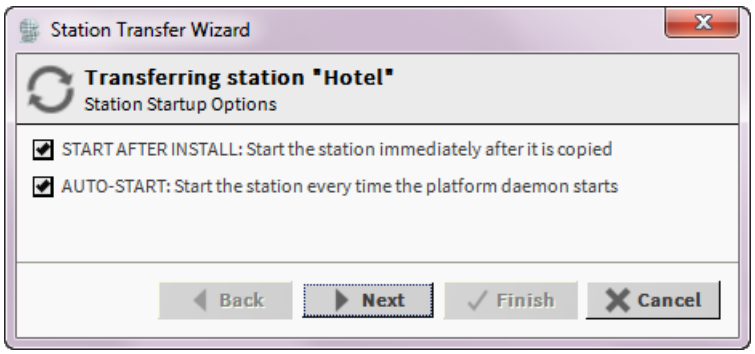
The following screens show the creation of the station by using the recommended option **copy it to secure platform for "localhost" with Station Copier**.

6. Click **Finish** button.

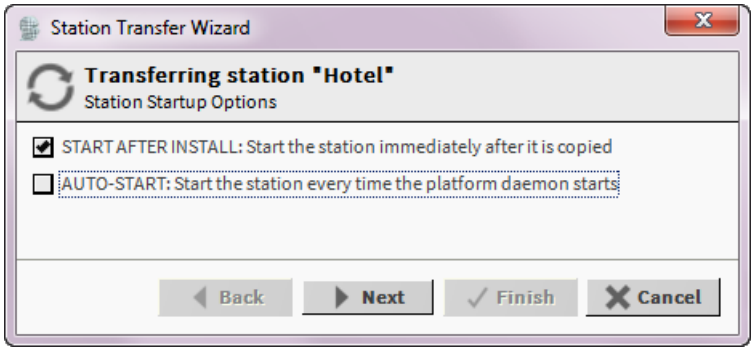
   RESULT: The *Loading Module Information* message *box* displays.

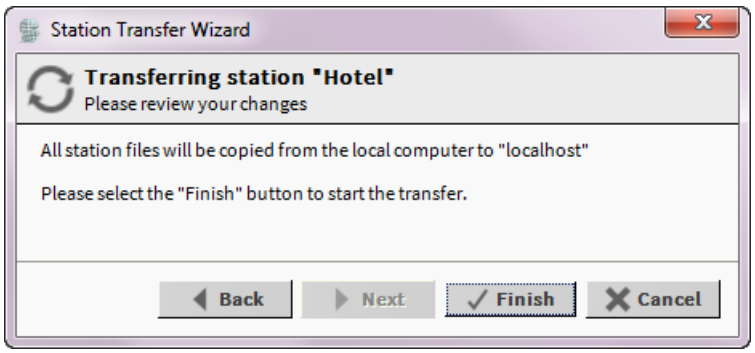


RESULT: Then the *Transferring station ...* dialog box displays.



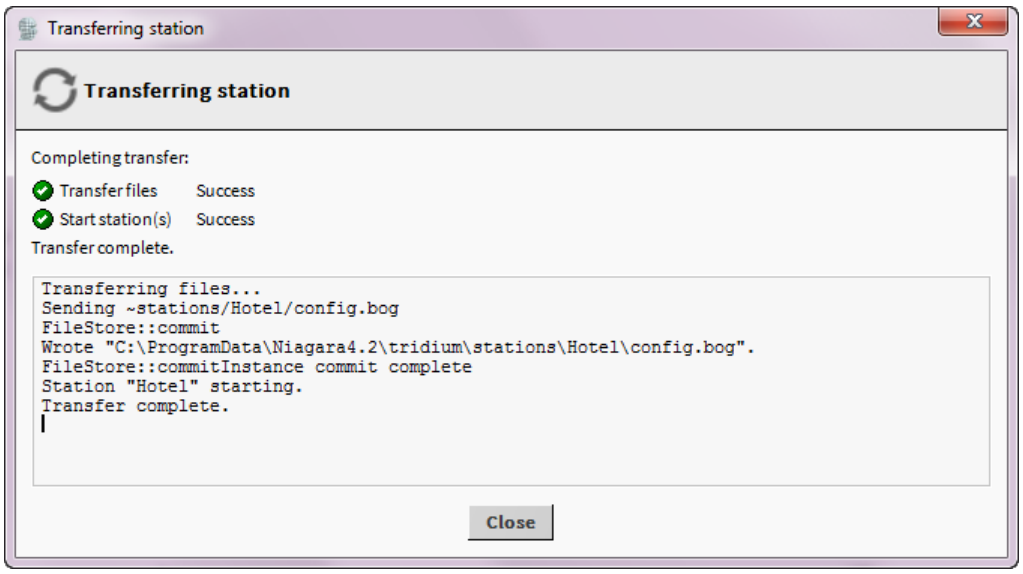
7. Check whether you want to start the station after copy immediately and once, or whether you want to start the station immediately after copy and automatically every time after platform daemon start.





8. Click **Finish** button.

RESULT: In this example, when the station copier function was used, the copy (transfer) process is successfully completed indicated by the corresponding messages.



9. Click **Close** button.

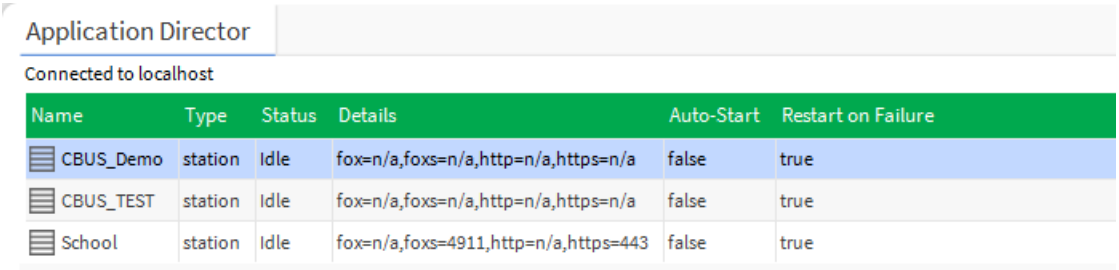
   RESULT: The station will be started.

START AND CONNECT TO STATION

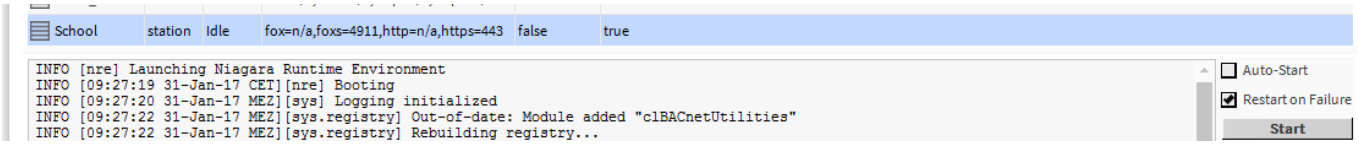
Procedure

1. On the *Platform* pane on the right, double-click on the **Application Director** utility.

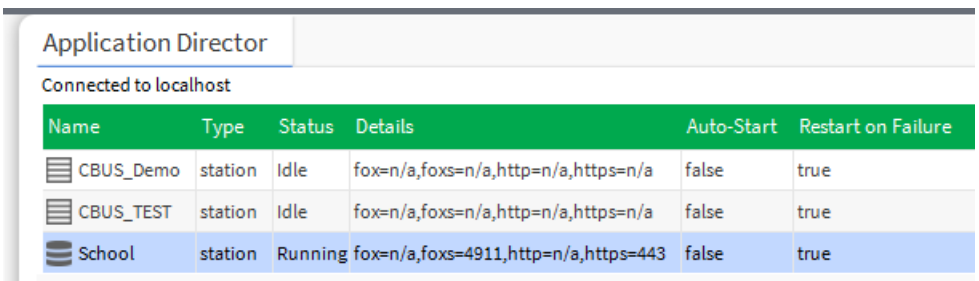
   RESULT: On the right pane, under *Connected to local host*, all stations are displayed.



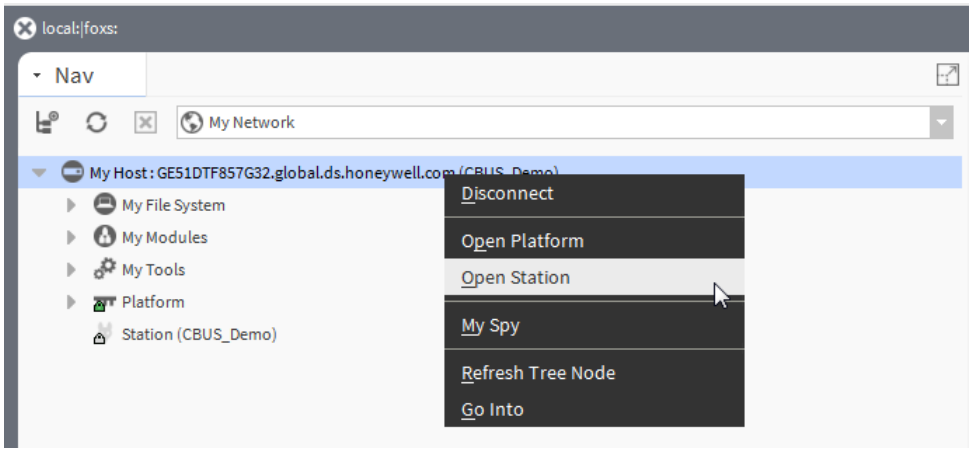
2. In the list, select the station, and then click **Start** button on the right.



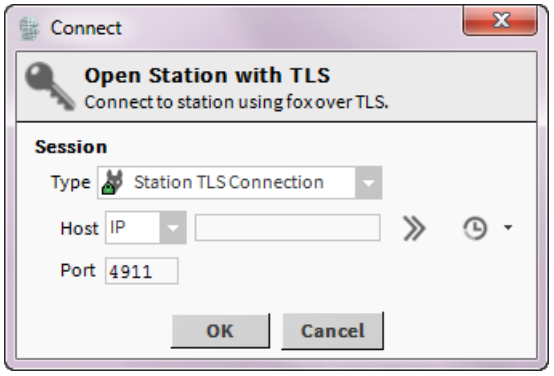
   RESULT: The station is started as indicated by the status ´Running` in the **Status** column.



3. In the Nav side bar, right-click on the *My Host f*older, and then click **Open Station** in the context menu.

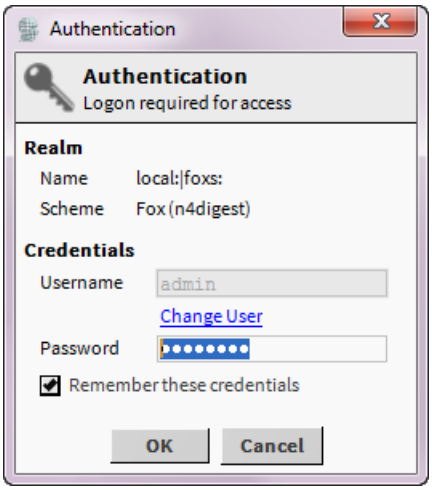


RESULT: The *Connect* dialog box displays.



4. Click **OK**.

RESULT: The *Authentication* dialog box displays.



5. If not already done, enter **Username** and **Password** and check **Remember these credentials**.

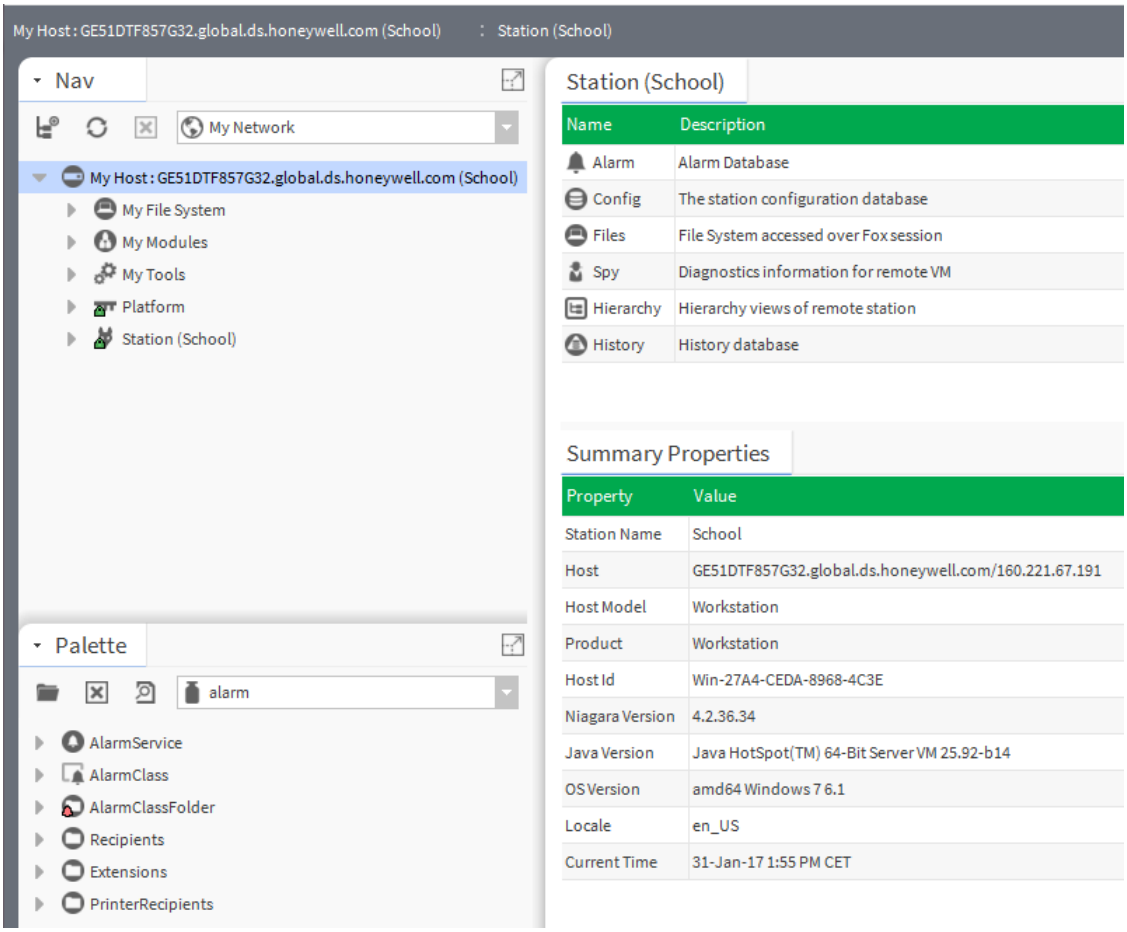
NOTE: For customer sites it is not recommended to enable the **Remember these credentials** option.

6. Click **OK**.

RESULT: The station will be opened. On the *Station* pane on the right the components of the station are displayed:

- Alarm
- Config
- Files
- Spy
- Hierarchy
- History

At the bottom, the *Summary* pane displays general properties and its settings (Station Name, Host, etc.) of the station.



CREATE BACNET NETWORK

Choose Working Environment - Work with or without BACnet Utilities

Before creating a BACnet network, you can choose the working environment by using the CentraLine Add-ons (views, and reading, changing and saving of time programs) provided by the BACnet Utilities driver or by either working without these driver features.

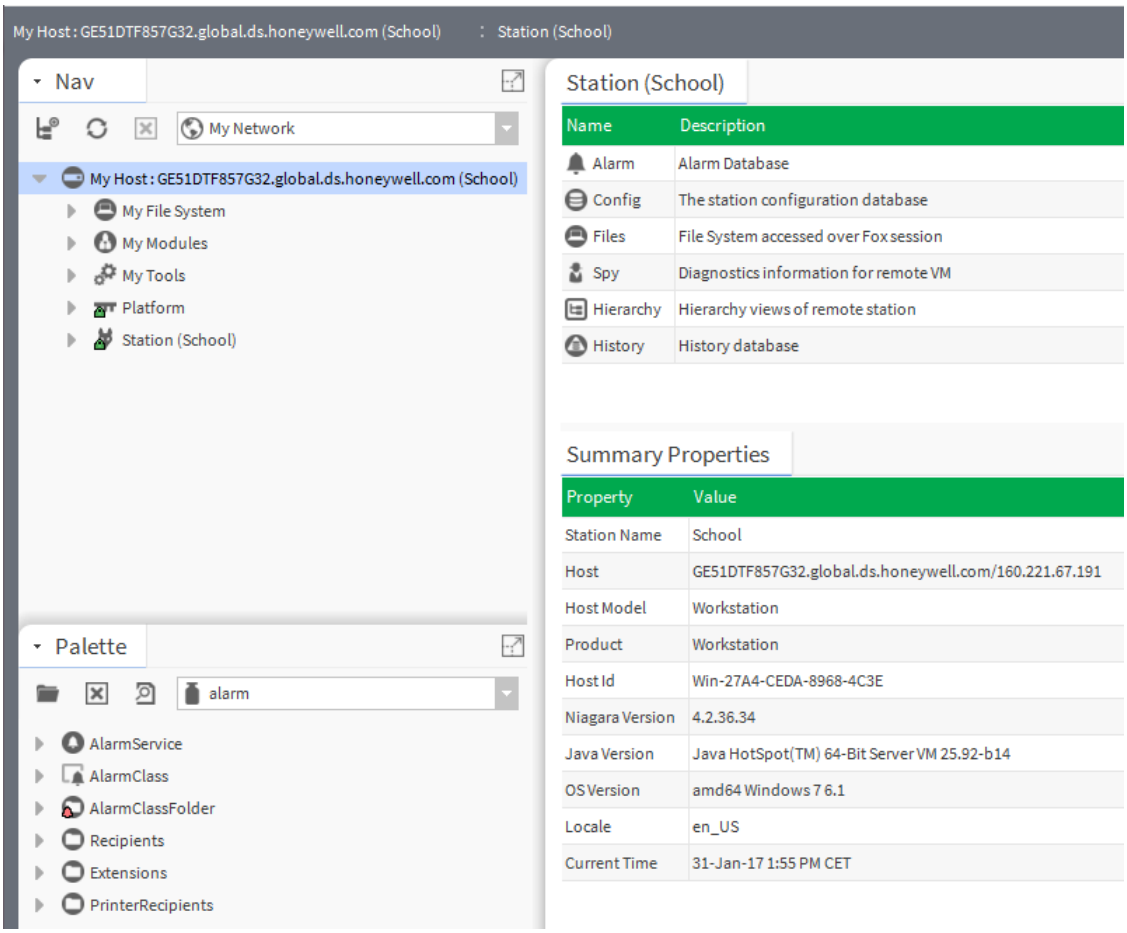
The CentraLine Add-ons are only applicable if the Honeywell BACnet service (HonBACnetService) is enabled. If the CentraLine Add-ons are not desired, this service should not be enabled.

If you want to use the CentraLine Add-ons, please enable the Honeywell BACnet Service the as described in the subsequent "Enable Honeywell BACnet Service" section before you create the BACnet network.

If you do not want to use the CentraLine Add-ons, please continue with the procedure described below.

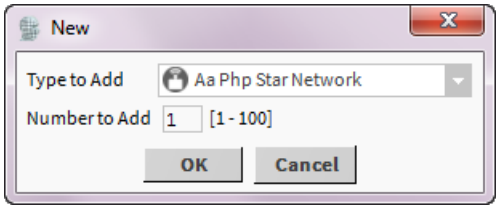
Procedure

1. In the *Nav* side bar, expand the *Station* folder, and then click on **Drivers**.

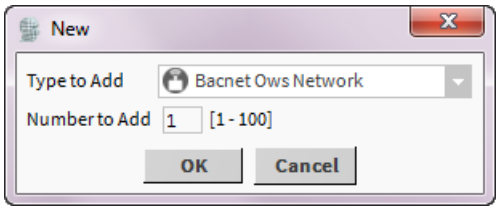


2. On the right pane, click **New**.

   RESULT: The *New* dialog box displays.

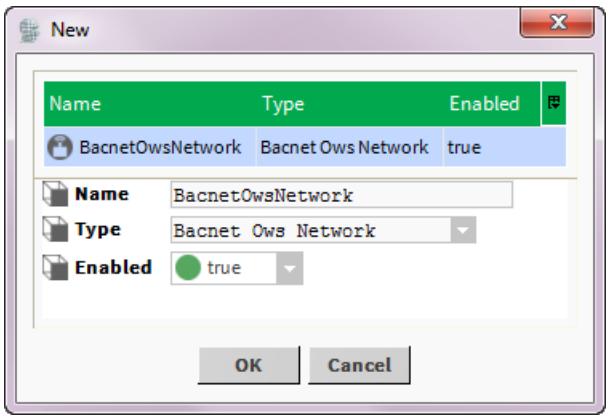


3. In **Type to Add**, select the BACnet network type, e.g. ´Bacnet Ows Network`.



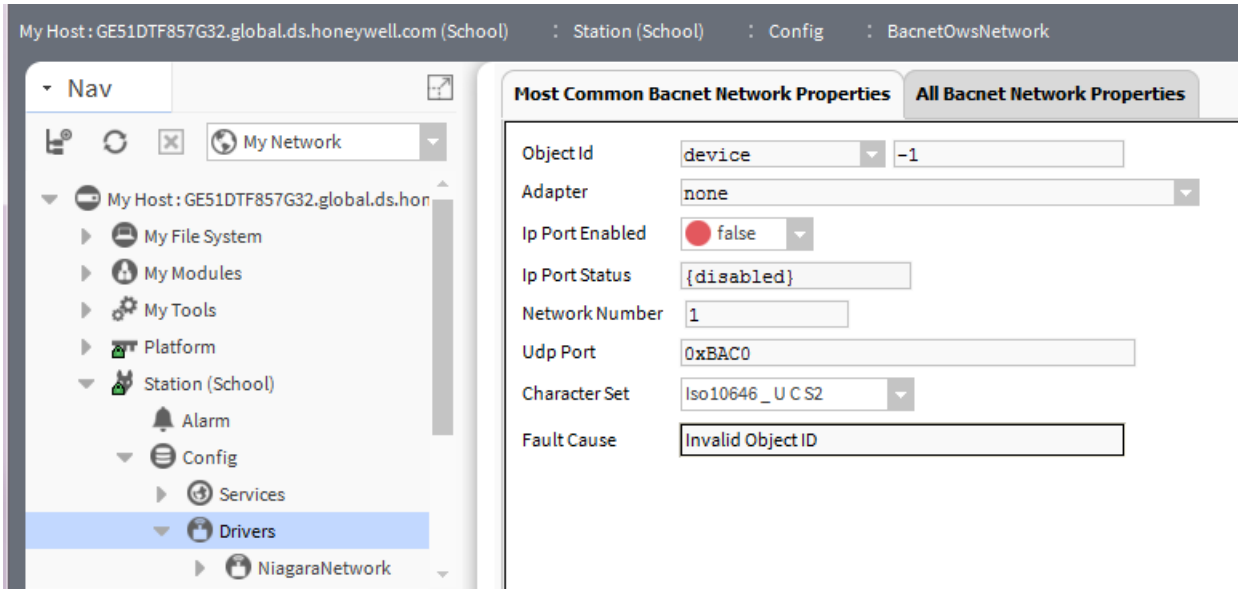
4. Click **OK**.

   RESULT: The *New* dialog box is updated.

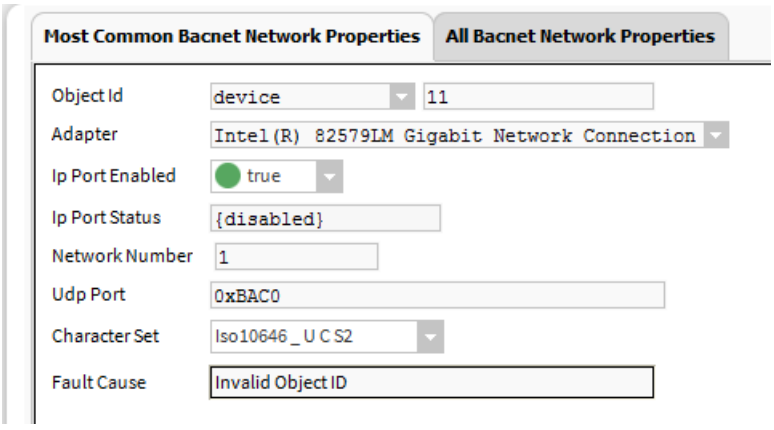


5. Click **OK**.

   RESULT: The BACnet network is created and its properties are displayed on the right *All Bacnet Network* Properties tab.

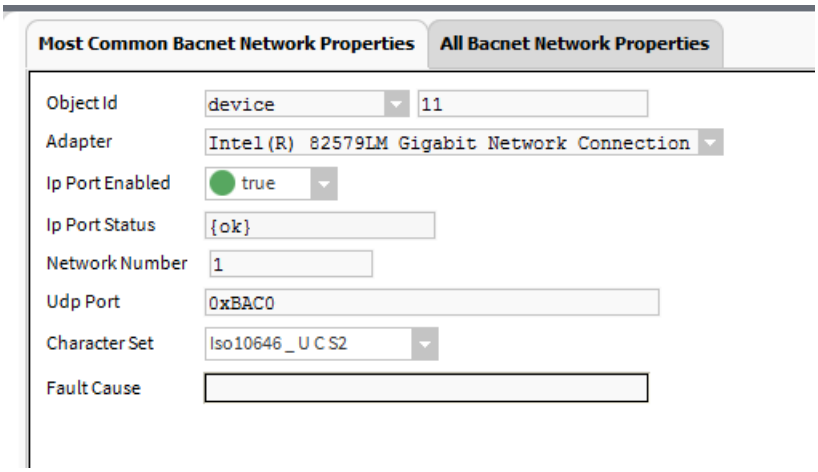


6. In **Object Id**, change the default Id = -1 by entering another but unique ID.
7. In **Adapter**, select the network adapter which is connected to the BACnet bus.
8. In **IP Port Enabled**, select ´true`.
9. If you have a mixed configuration with EAGLE and FALCON controllers, select the ´ISO5889-1` character set in **Character Set,** otherwise leave the default setting.

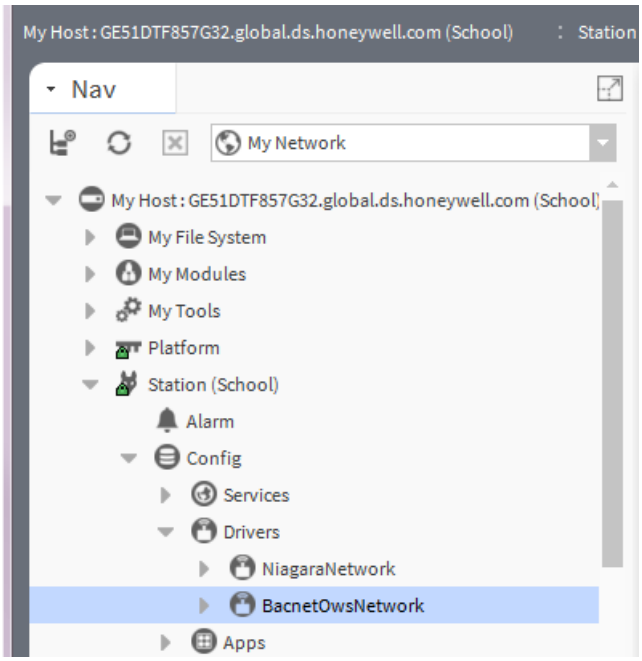


10. Click **Save** at the bottom.

RESULT: If all properties are selected appropriate and if the hardware is properly installed, the **Ip Port Status** field is set to ´true`.



The network is added to the *Drivers* folder in the *Nav side bar*.



Enable Honeywell BACnet Service

The Honeywell BACnet service must be enabled if you want to use the CentraLine specific Add-ons provided by the CentraLine BACnet Utilities driver. This step must be done before creating the BACnet network.

Enabling the service includes 2 steps:

1. Adding the service to the *Services* tree
2. Enabling the service on its *Properties Sheet*

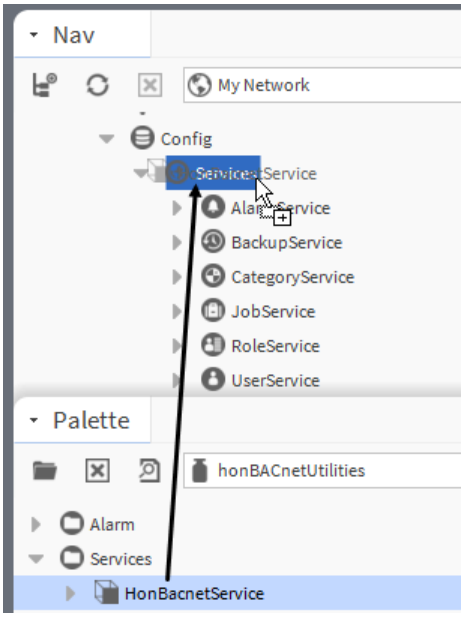
In CentraLine NX 4.2.xx.xx.x.x and lower, the service is already added to the *Services* tree by default. In CentraLine NX 4.3.xx.xx.x.x and higher, the service is not available by default and must be added to the *Services* tree manually.

NOTE: When using a station from a previous project in CentraLine NX 4.4.xx.xx.x.x, the Honeywell BACnet Service is available in disabled state as shown in the *Services* tree and on the *Properties Sheet*. If available, the

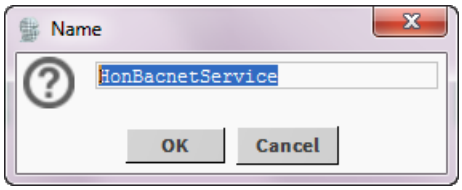
Honeywell BACnet Service can be enabled/disabled at any time on the *Properties Sheet*

Procedure

1. In the *Palette* tab at the bottom, select **honBACnetUtilities** from the drop-down listbox, then open *Services*, and then drag&drop the **HonBACnetService** item to the *Services* folder.

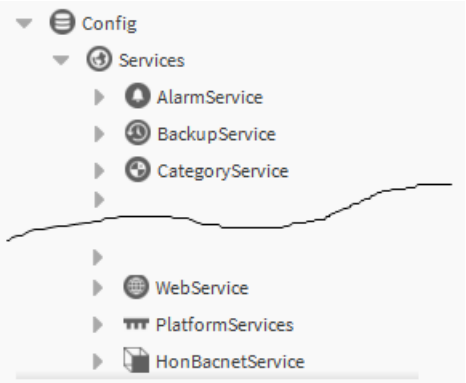


RESULT: The *Name* dialog box displays.

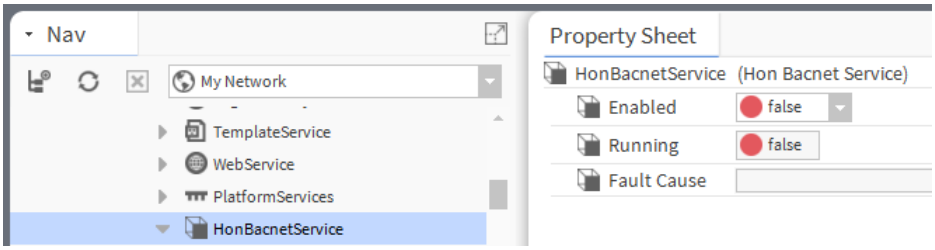


2. Change the name if desired, and then click **OK**.

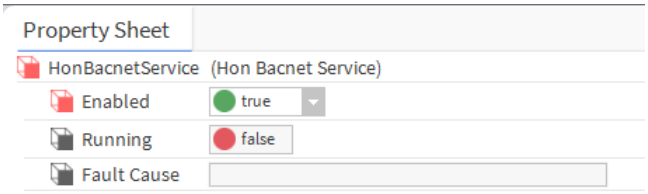
RESULT: The service is added to the *Services* folder.



3. Double-click the HonBacnetService in the tree.

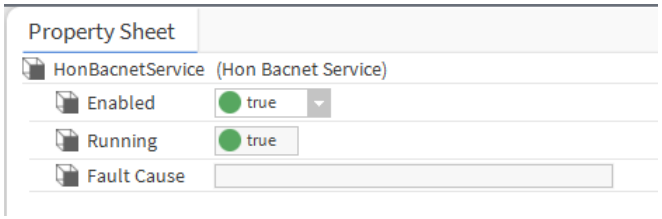


4. On the *Property Sheet* on the right, select ´true` in the **Enabled** drop-down listbox.



5. Click the **Save** button at the bottom.

   RESULT: The service will be started indicated by ´true` setting in the **Running** drop-down listbox.

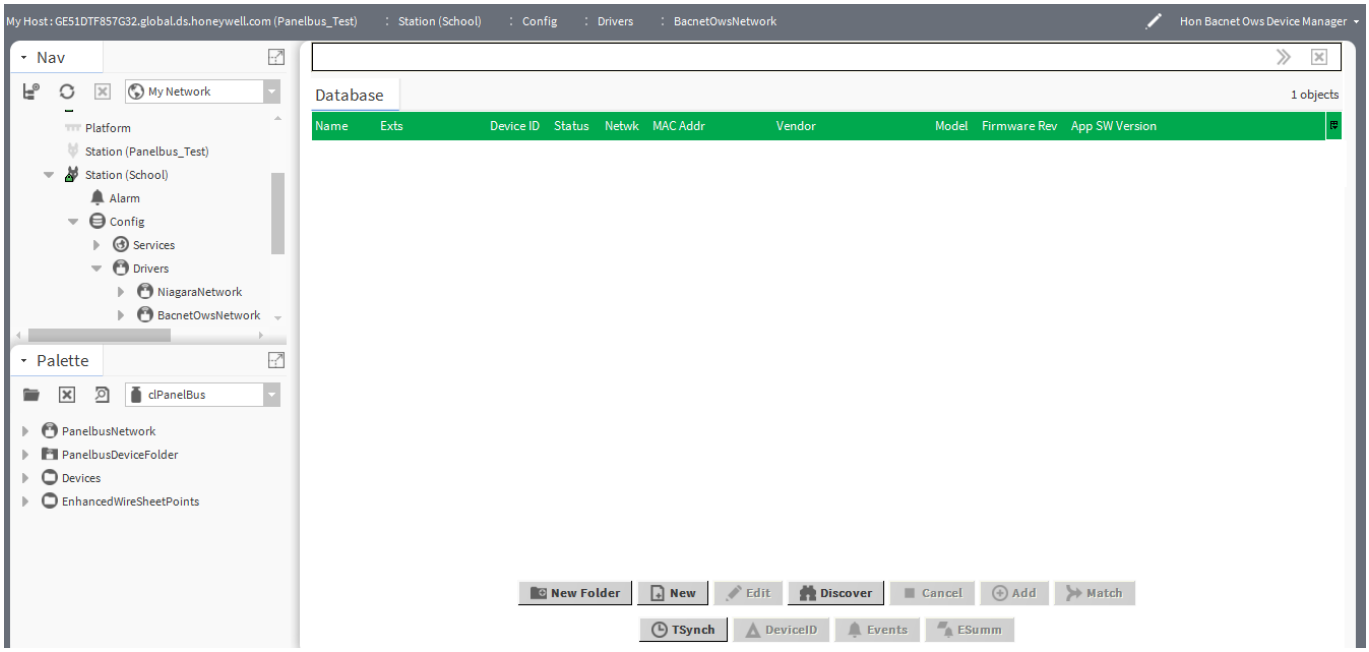


6. Continue by creating the BACnet network as described in the previous "Create BACnet Network" section.

ADD CONTROLLER TO STATION

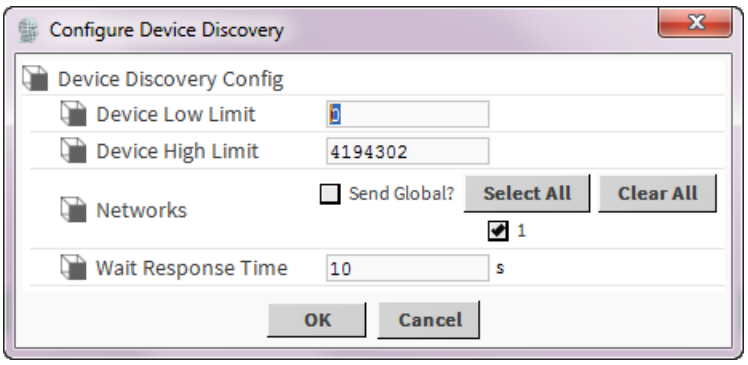
Procedure

1. In the *Nav* side bar, expand the *Station* folder, and then click on the BACnet network on which you want to discover BACnet devices.



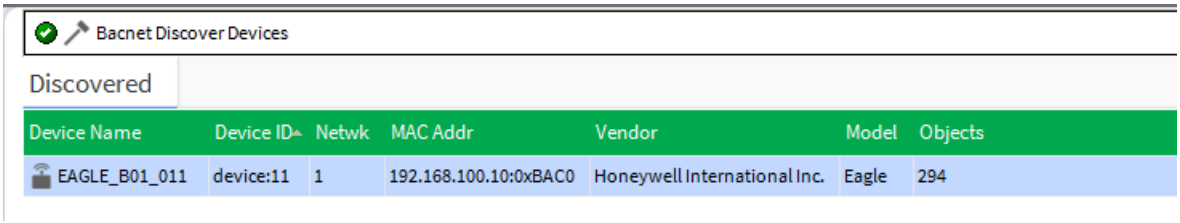
2. On the right *Database* pane, click **Discover**.

   RESULT: The *Configure Device Discovery* dialog box displays.



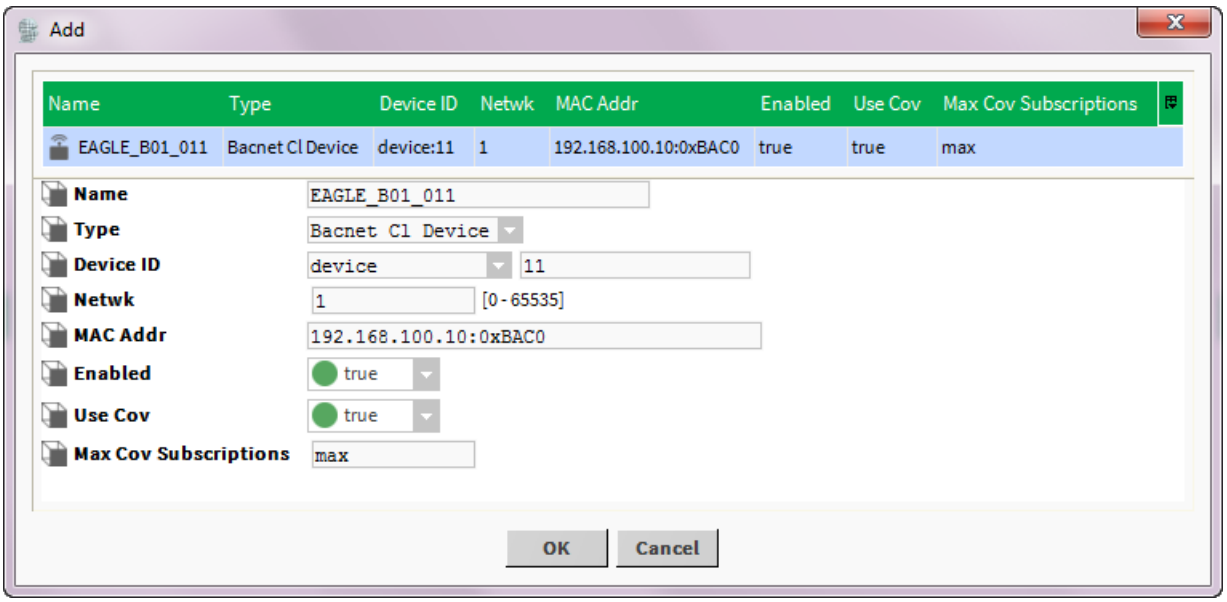
3. Click **OK**.

   RESULT: In the upper *Discovered* area, the found BACnet devices are displayed.



4. Select the device, and then click the **Add** in the buttons bar at the bottom.

   RESULT: The *Add* dialog box displays.

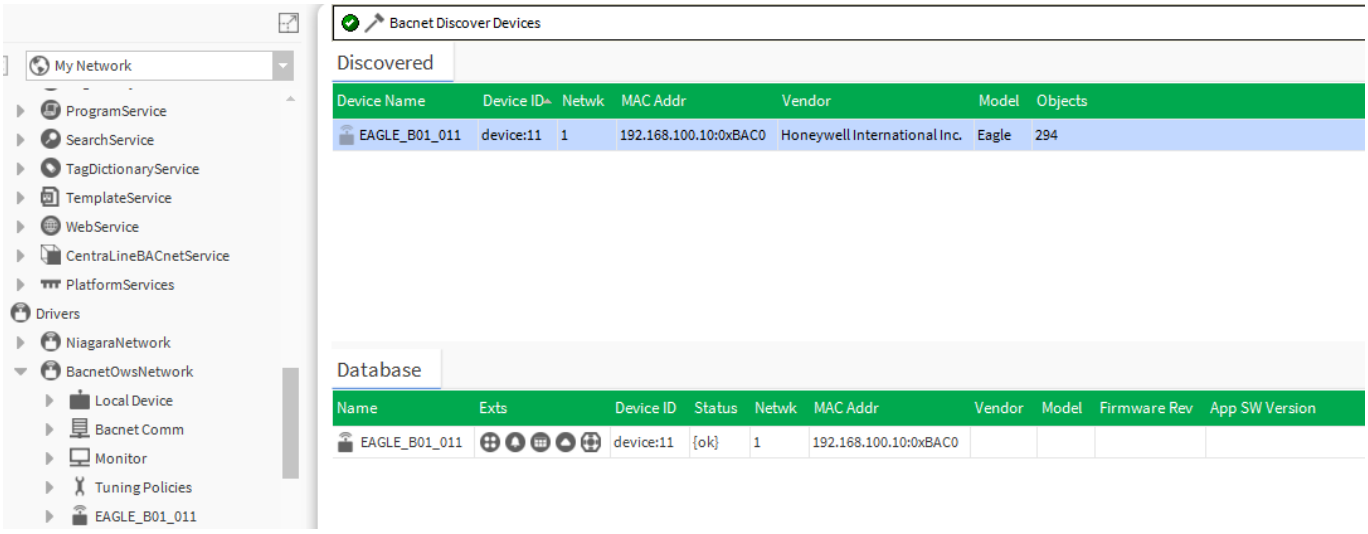


5. In Type, select the device type, for EAGLE, FALCON, or HAWK, select Cl, for all others, and select "Standard" BACnet Device.

6. Click **OK**.

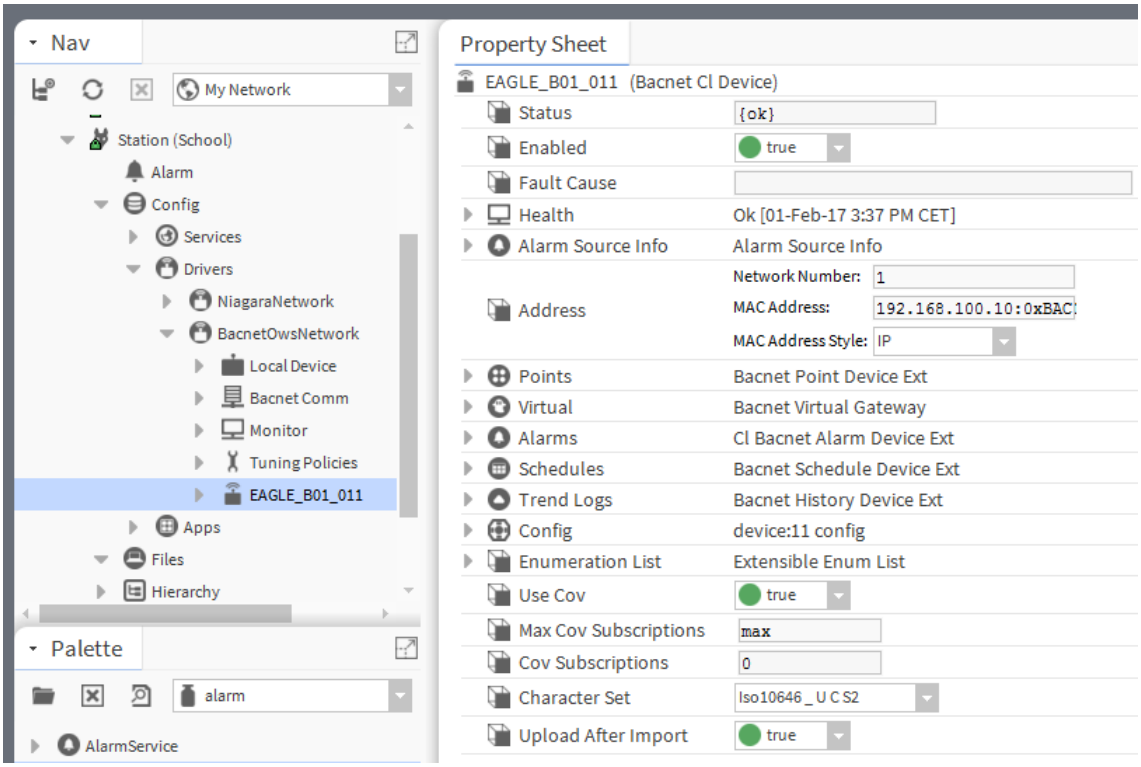
   RESULT: The device is added to the database as indicated in the *Database* area.

   In the *Nav side bar*, the device is added to the station and displayed under the BACnet network.



7. To show, load or save device properties, double-click the device.

   RESULT: On the right pane, the device properties are displayed. You can load properties from the device by clicking the **Refresh** button, or you can edit properties and write them to the device by clicking the **Save** button.



8. To add controller objects to the station such as datapoints, schedules etc. you can use the items below the controller icon in the *Nav side bar* (see "Add Controller Objects to the Station" section)

ADD CONTROLLER OBJECTS TO THE STATION

The controller includes the following objects that can be added to the station:

- datapoints
- schedules
- calendars

- notification classes
- trends (online mode only)

ARENA NX / COACH NX provides two ways to add these objects to the station:

- **Objects Discovery in Online Mode**
  Objects will be discovered in the connected controller and added manually to default or user-definable folders in the *Nav side bar* (see "Discover Objects of Controller and Add them to Station" section)

- **EDE File Import in Offline and Online Mode**
  An *.EDE* file containing the objects with their original CARE project tree structure will be imported and displayed in ARENA NX / COACH NX (see "Add Objects to Station via EDE File Import" section).

  The EDE file will be automatically created when translating the controller in CARE. It can be found in the corresponding project folder of the CARE directory. A further *.StateTexts* file containing the state texts must be imported too.

  EDE File Import and Controller Creation
  The *.EDE* file import slightly differs dependent on how the applied controller had been created, manually or via discovery and addition. When a controller is created manually, the device ID = -1 is assigned to the controller by default. After import of the *.EDE* file, the default device ID (= -1) will be automatically replaced with the device ID of the controller in the CARE project. But, the network address and MAC address must be entered manually in accordance with the controller data. When a controller is created via Discovery and Add command, the device ID in the *.EDE* file and in the created controller are validated. For a successful import, they should be identical. If they are not identical, an error message will be displayed. The network address and MAC address need not be entered manually.

  NOTE: The offline import function is supported by CARE 10.04.00 or higher and by previous CARE versions that are updated with the *CtrlAppGen.dll*. The *.dll* file will be provided on the CentraLine Partner Web (see ARENA NX Software Release Bulletin for details).

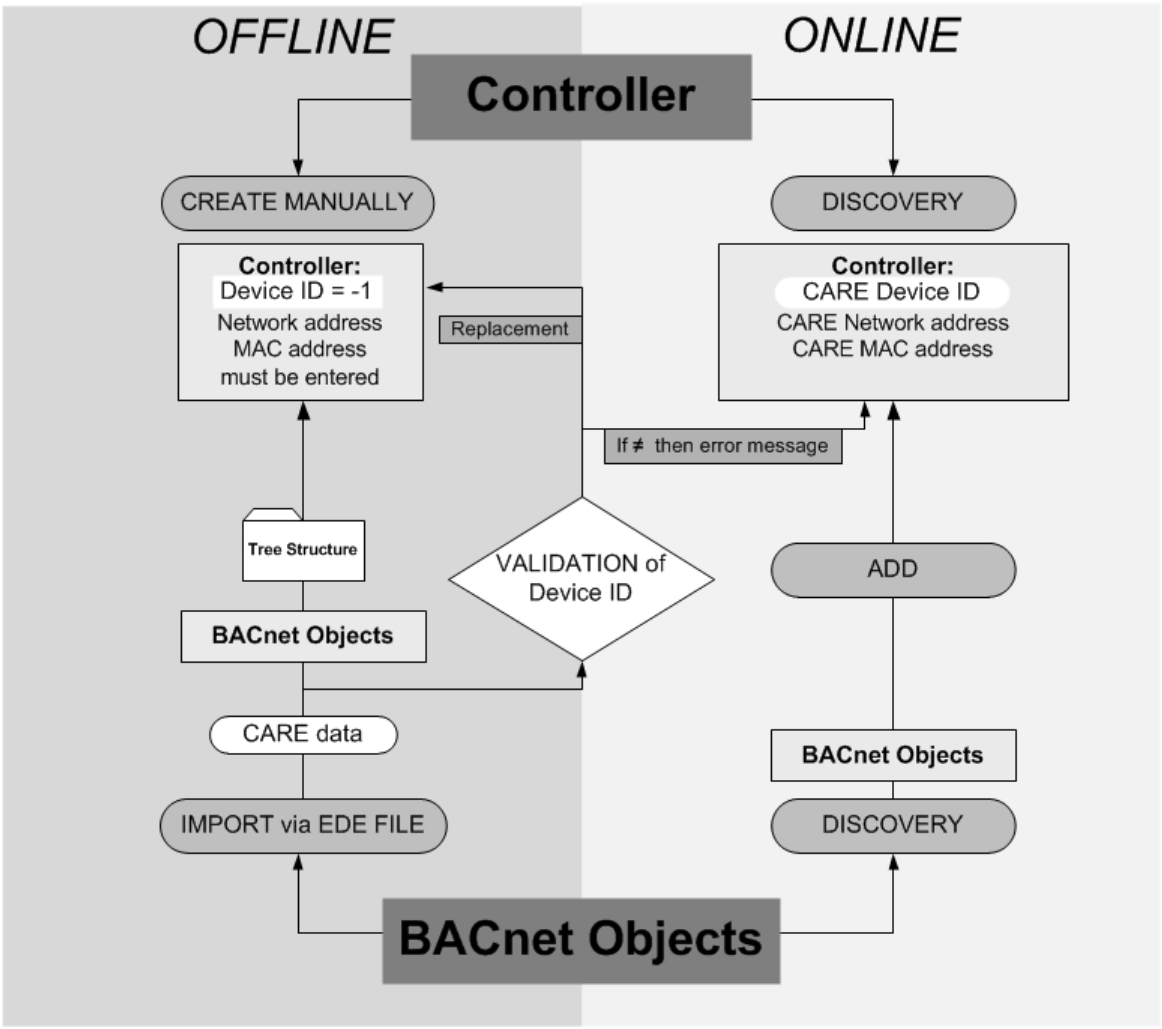


Fig. 1. Objects Discovery and EDE-File Import in Online and Offline Mode

Prior to the execution of the discovery or import function, the controller in the *Nav side bar* already shows the following empty default folders:

- Alarm source info
- Points
- Virtual
- Alarms
- Schedules
- Trend Logs
- Config

When applying the discovery method, you can add the discovered objects to the corresponding default folders, e.g. datapoints to the *Points* folder, or you can add the discovered objects to folders created by your own.

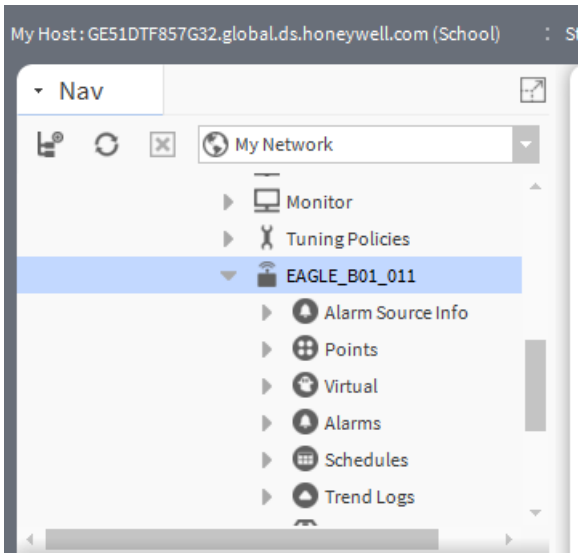
When applying the import EDE file method, the default folders will be overridden by the imported CARE folders.

Discover Objects of Controller and Add them to Station

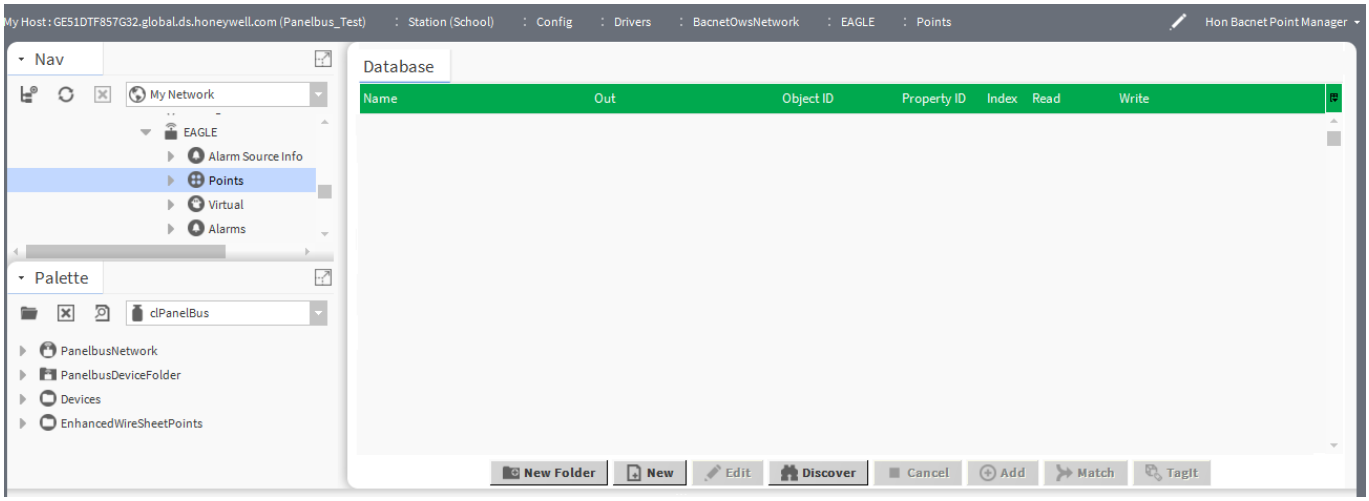
Purpose In the following, the discovery of all objects in the connected controller and, as an example, the addition of datapoints to the station is described. This procedure is done online with the connected controller and does not import the tree structure of the CARE project. Hence, you can individually create folders and arrange the discovered objects in the folders. All objects of the controller can be added to the station.

Procedure

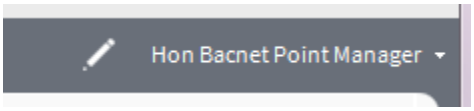
1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the controller.



2. Double-click the folder which you want to add datapoints to, e.g. the *Points* folder, if you want to discover and add datapoints

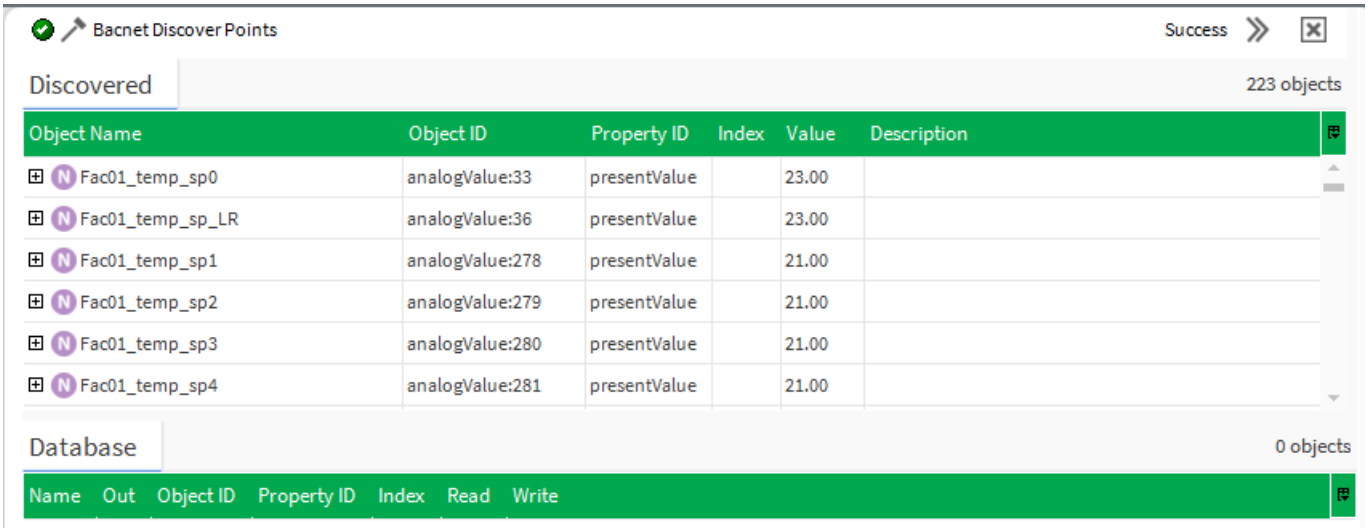


3. At the top on the right pane, select the **Hon Bacnet Point Manager** view which provides a filter function for datapoints.

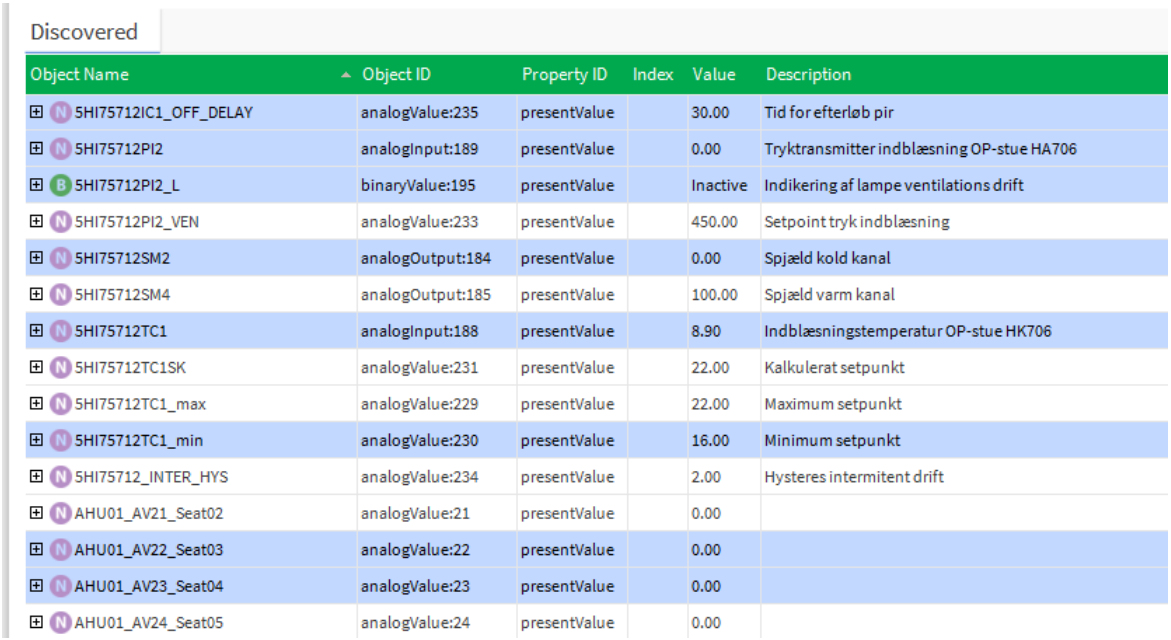


4. Click the **Discover** button.

RESULT: All objects of the controller will be listed in the upper *Discovered* pane.

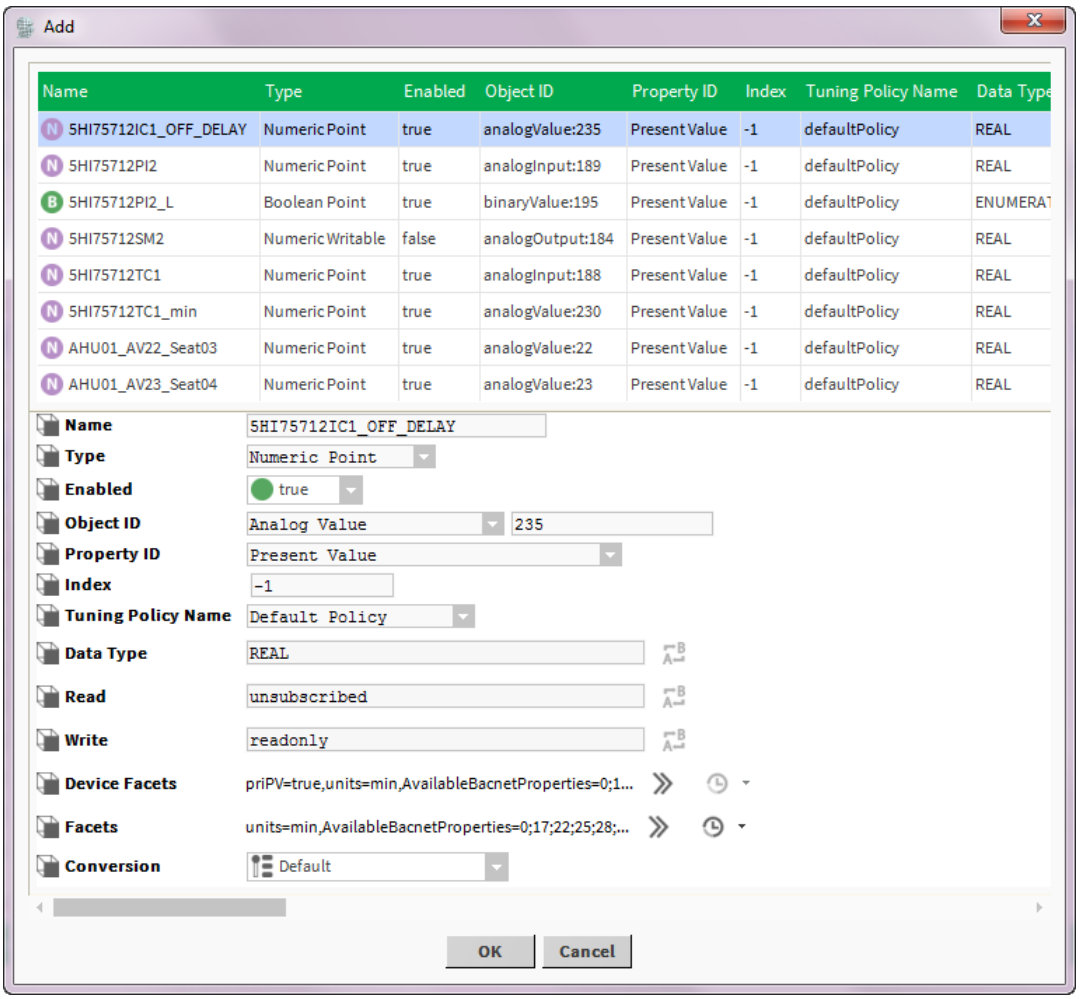


5. Select the datapoints you want to add to the station. Multi-selection using the SHIFT or STRG key is possible.



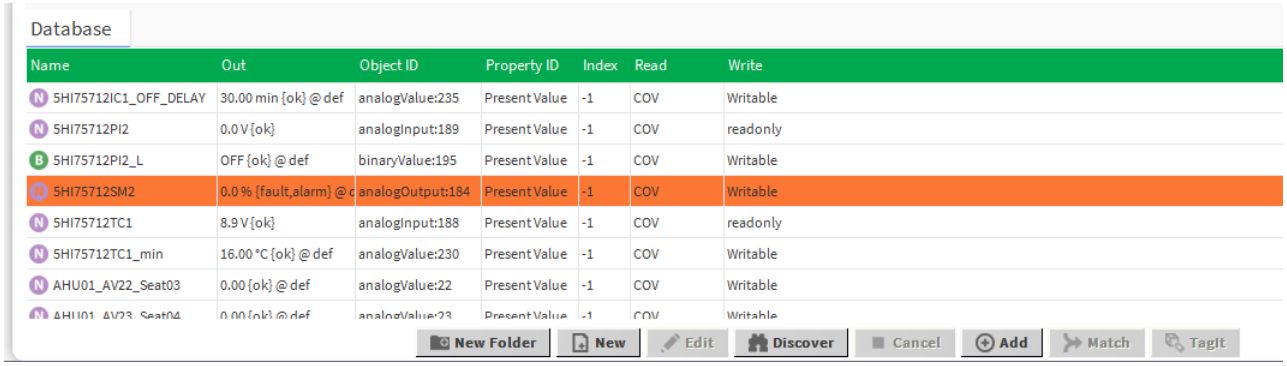
6. Click **Add** button.

   RESULT: The *Add* dialog box displays.



7. Click **OK**. Do not modify any settings of the datapoints, these will be reset based on a pre-defined mechanism while adding to the database.

   RESULT: The selected datapoints are added to the station. They are displayed twice, in the lower *Database* pane and in the *Points* folder in the *Nav side bar*.



8. It is recommended to create a structure for arrangement of the different datapoint types by clicking the **New Folder** button. 0054he use of these folders will help to reduce the load on the BACnet bus while subscribing Cov.

9. After you are finished with the creation of the structure, move the datapoints to the corresponding folders.

Add Objects to Station via EDE File Import

Purpose

In the following, the automatic addition of all controller objects to the station is described.

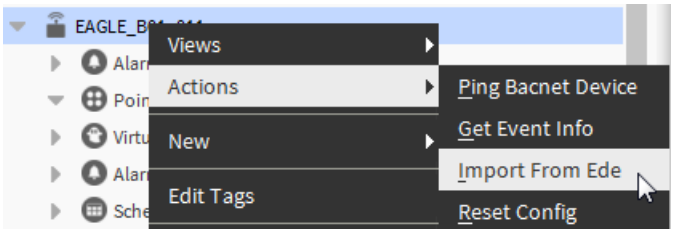
This procedure is done offline without controller connection and imports the objects and the complete tree structure of the CARE project. Hence, you do not need to create folders and arrange the objects in folders manually.

It may occur that some objects cannot be imported to the station due to naming convention mismatches between ARENA NX / COACH NX and CARE. These objects must be added to the station online and manually using the Discovery function.

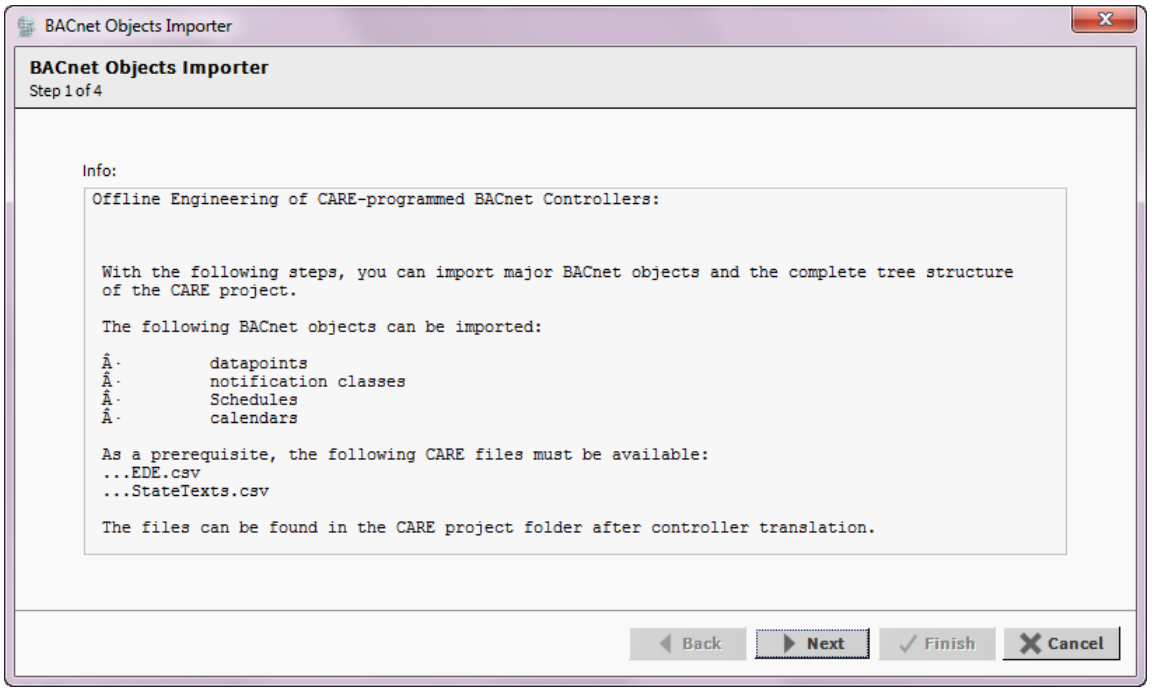
NOTE: During EDE file import, the device is disabled temporarily and will be enabled after the import is finished.

Procedure

1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the controller.
2. Right-click the controller, click **Actions** and then click **Import from Ede** in the context menu.

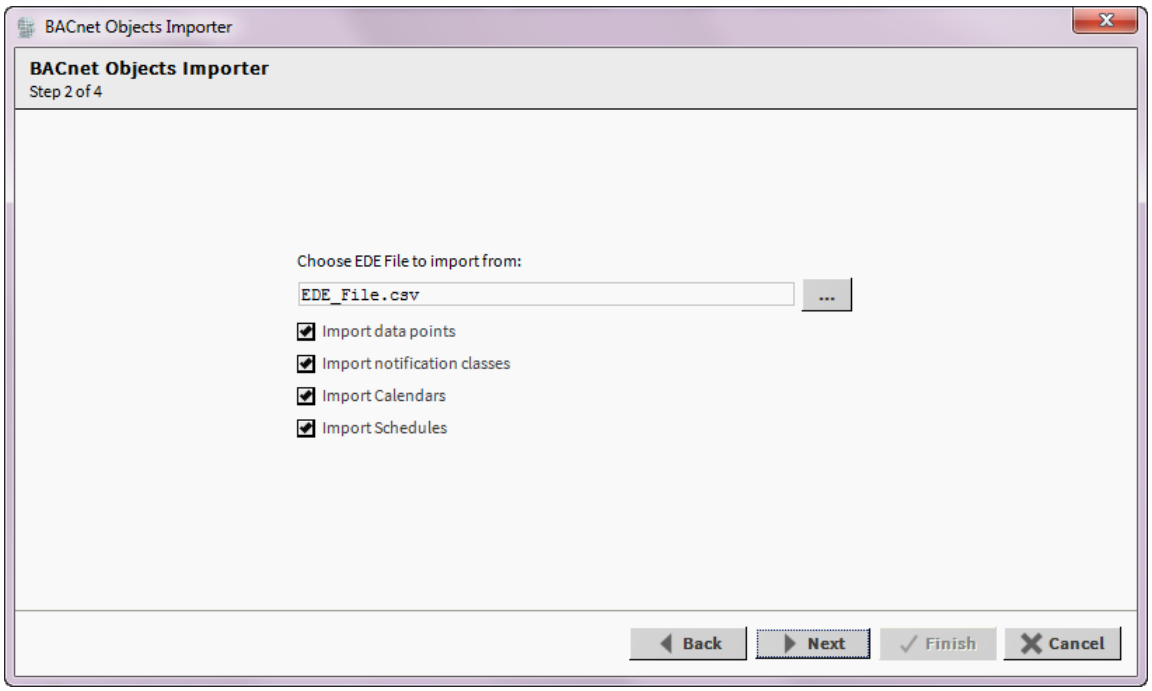


RESULT: The *BACnet Objects Importer* wizard displays.



7. Click **Next** button.

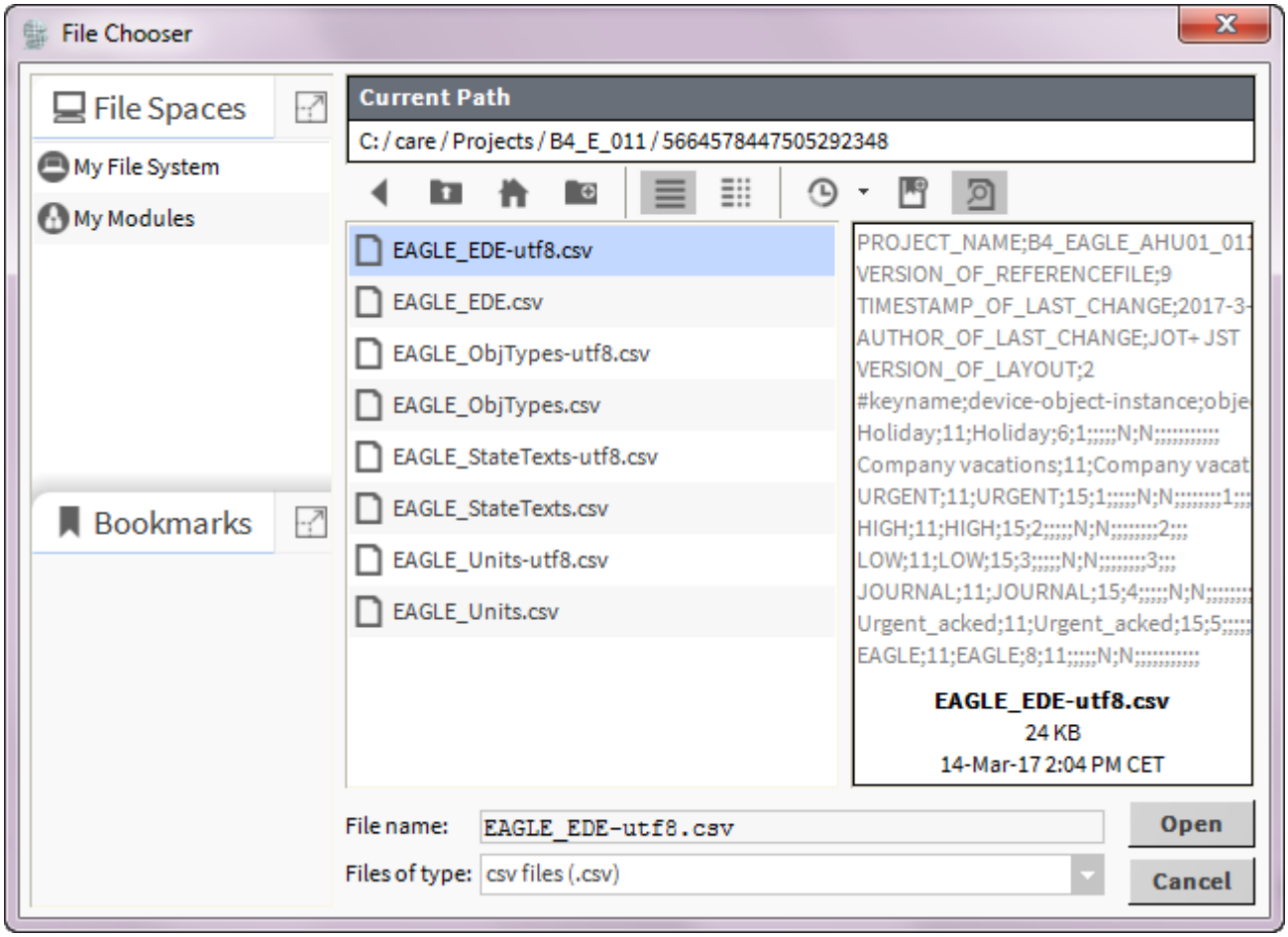
RESULT: The following *BACnet Objects Importer* wizard displays.



3. Check the **Import…** options that state the objects to be imported (data points, notification classes, schedules, calendars) and uncheck the options, you do not want to apply.

4. In the **Choose EDE file to import from** field, click the **Browse** button.

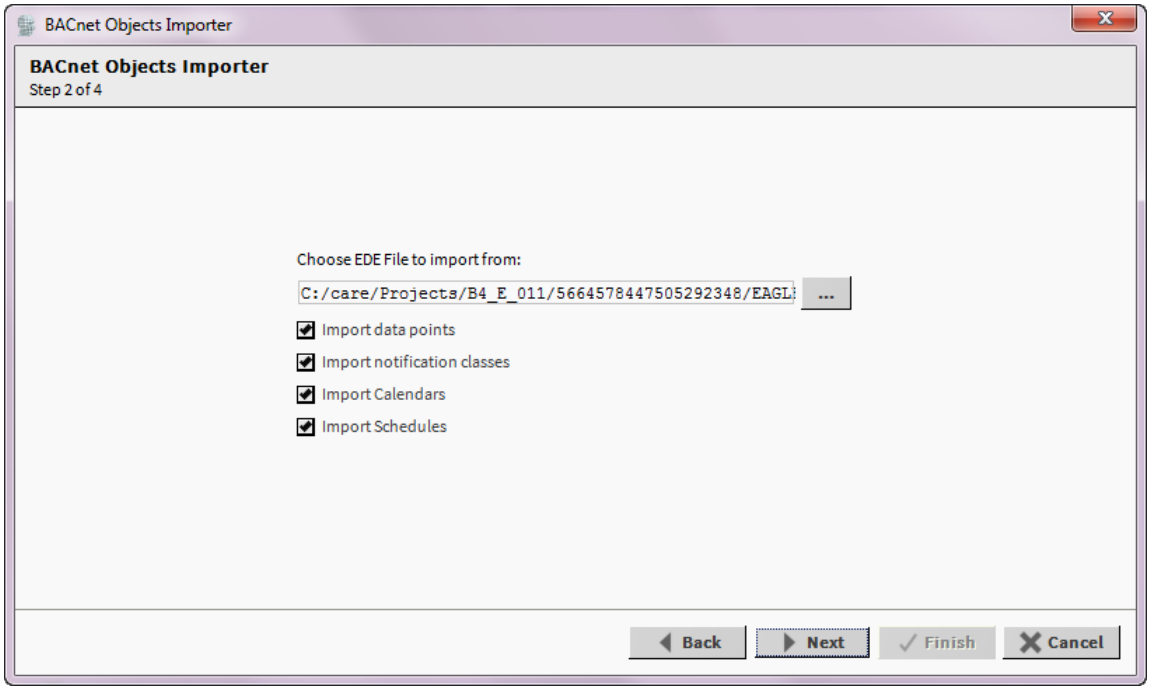
   RESULT: The *Filer Chooser* dialog box displays.



5. Browse to the folder where the EDE file is saved, select it, and then click **Open** button.

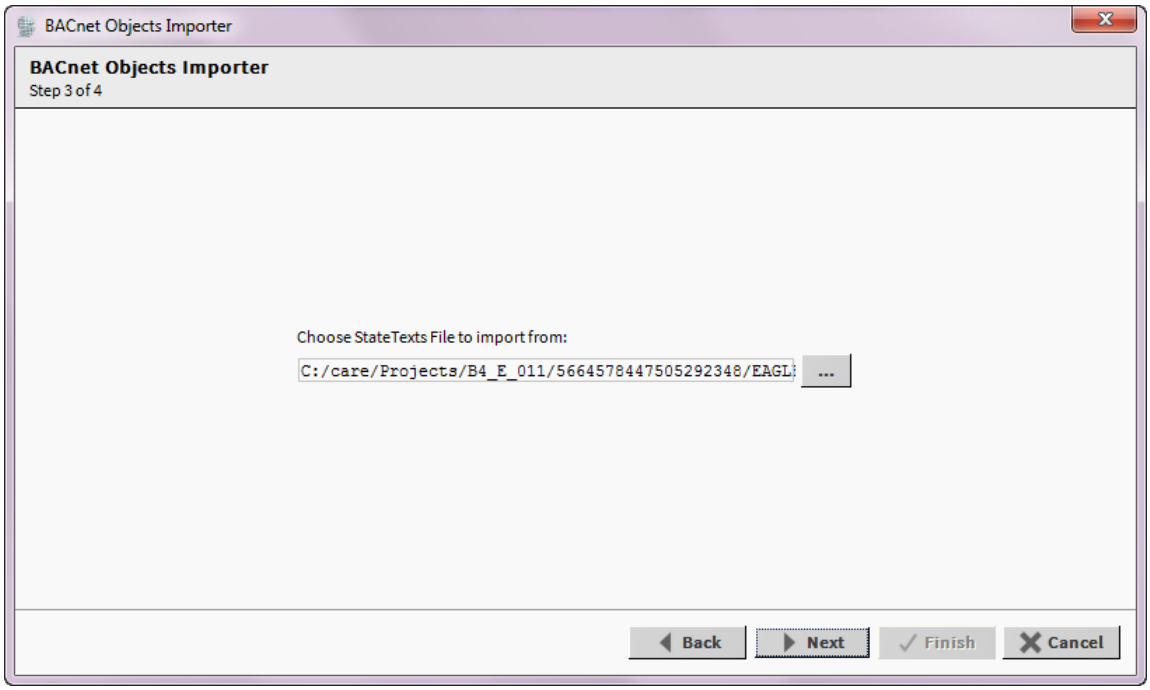
NOTE: It is recommended to select the ...utf8 file version since this version supports the most characters, e.g. umlauts.

RESULT: The path of the selected EDE file is displayed in the **Choose EDE file to import from** field.

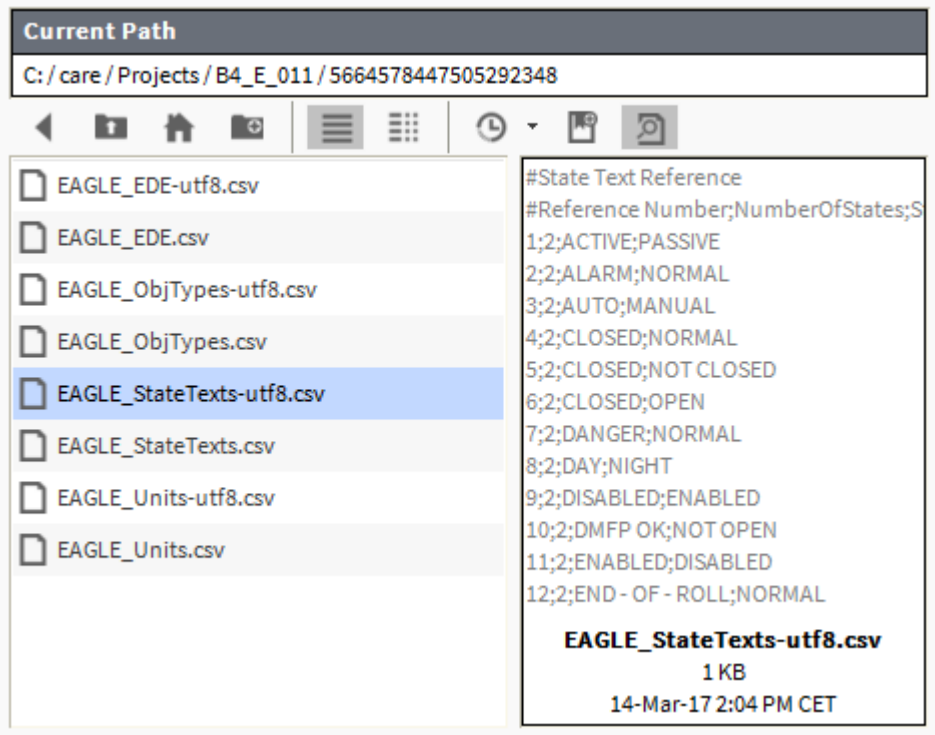


7. Click **Next** button.

RESULT: The EDE file for the state texts is indicated for import in the **Choose State Texts File to import from** field.

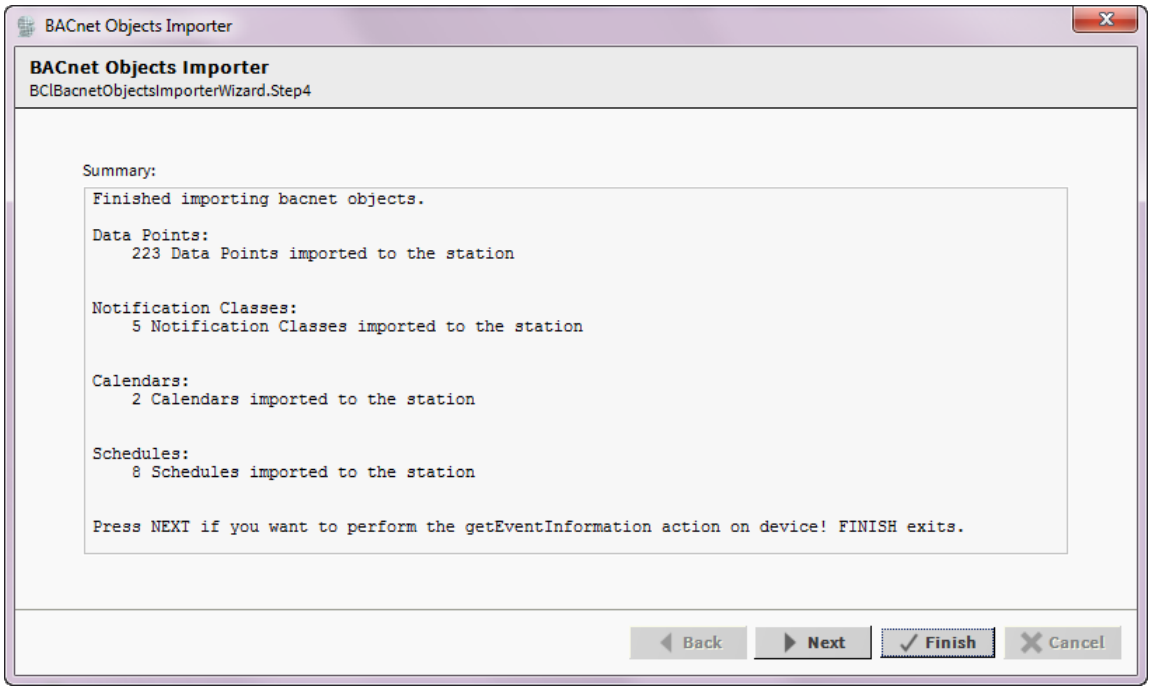


8. Import this EDE file in the same way as the main EDE file described in step 6 et. seq.



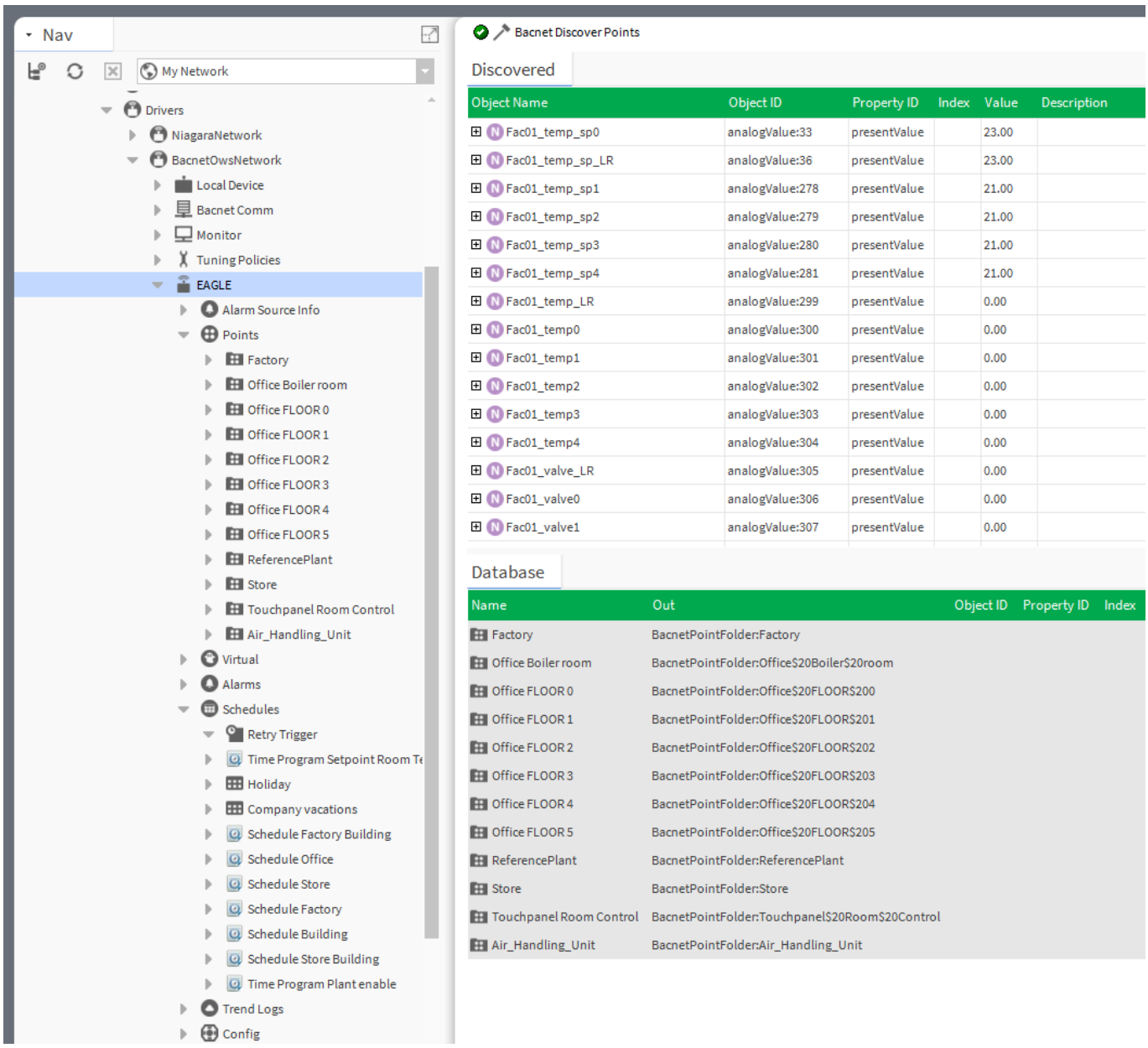
9. Click **Next** button.

RESULT: The **Summary** report is shown in the *BACnet Objects Importer* wizard screen. If objects are not imported, please read the message carefully and import the objects manually using the Discovery function.



10. Click **Finish** button.

RESULT: In the *Nav side bar* below the controller, the complete tree structure of the CARE project with all importable objects is displayed. Datapoints and their folders are arranged below the *Points* folder, schedules and calendars are arranged below the *Schedules* folder.


Nav
My Network
Drivers
NiagaraNetwork
BacnetOwsNetwork
Local Device
Bacnet Comm
Monitor
Tuning Policies
EAGLE
Alarm Source Info
Points
Factory
Office Boiler room
Office FLOOR 0
Office FLOOR 1
Office FLOOR 2
Office FLOOR 3
Office FLOOR 4
Office FLOOR 5
ReferencePlant
Store
Touchpanel Room Control
Air_Handling_Unit
Virtual
Alarms
Schedules
Retry Trigger
Time Program Setpoint Room Te
Holiday
Company vacations
Schedule Factory Building
Schedule Office
Schedule Store
Schedule Factory
Schedule Building
Schedule Store Building
Time Program Plant enable
Trend Logs
Config
Bacnet Discover Points
Discovered
Object Name
Object ID
Property ID
Index
Value
Description
Fac01_temp_sp0 analogValue:33 presentValue 23.00
Fac01_temp_sp_LR analogValue:36 presentValue 23.00
Fac01_temp_sp1 analogValue:278 presentValue 21.00
Fac01_temp_sp2 analogValue:279 presentValue 21.00
Fac01_temp_sp3 analogValue:280 presentValue 21.00
Fac01_temp_sp4 analogValue:281 presentValue 21.00
Fac01_temp_LR analogValue:299 presentValue 0.00
Fac01_temp0 analogValue:300 presentValue 0.00
Fac01_temp1 analogValue:301 presentValue 0.00
Fac01_temp2 analogValue:302 presentValue 0.00
Fac01_temp3 analogValue:303 presentValue 0.00
Fac01_temp4 analogValue:304 presentValue 0.00
Fac01_valve_LR analogValue:305 presentValue 0.00
Fac01_valve0 analogValue:306 presentValue 0.00
Fac01_valve1 analogValue:307 presentValue 0.00
Database
Name
Out
Object ID
Property ID
Index
Factory BacnetPointFolder:Factory
Office Boiler room BacnetPointFolder:Office$20Boiler$20room
Office FLOOR 0 BacnetPointFolder:Office$20FLOOR$200
Office FLOOR 1 BacnetPointFolder:Office$20FLOOR$201
Office FLOOR 2 BacnetPointFolder:Office$20FLOOR$202
Office FLOOR 3 BacnetPointFolder:Office$20FLOOR$203
Office FLOOR 4 BacnetPointFolder:Office$20FLOOR$204
Office FLOOR 5 BacnetPointFolder:Office$20FLOOR$205
ReferencePlant BacnetPointFolder:ReferencePlant
Store BacnetPointFolder:Store
Touchpanel Room Control BacnetPointFolder:Touchpanel$20Room$20Control
Air_Handling_Unit BacnetPointFolder:Air_Handling_Unit

VIEW / EDIT DATAPOINT PROPERTIES

The properties of a datapoint vary dependent on the datapoint type. The following datapoint types are available in ARENA NX / COACH NX:

- analog input (AI)
- analog output (AO)
- analog value (AV)

- binary input (BI)
- binary output (BO)
- binary value (BV)

- multi-state input (MI)
- multi-state output (MO)
- multi-state value (MV)

For detailed descriptions of the properties of a particular datapoint, please refer to the "BACnet Datapoint Properties Descriptions" section.

Viewing/editing datapoint properties may include tasks which can be done the following General areas:

"General"
- View properties such as description, present value and status flags
- Override present value manually

Alarming
- Enable/disable alarming
- Enable/disable intrinsic reporting
- Set Off-Normal conditions

Command Priorities
- View command priorities states
- Change relinquish default value

Other Properties
- View common properties such as event state, reliability, read and write access level
- View and change particular datapoint dependent properties such as COV increment, sensor offset, safety position, etc.

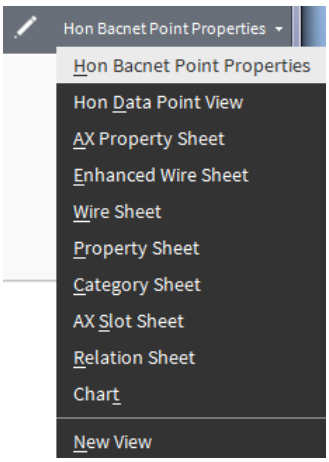
Counters
- View and reset state counter and runtime counter.

Datapoint Views

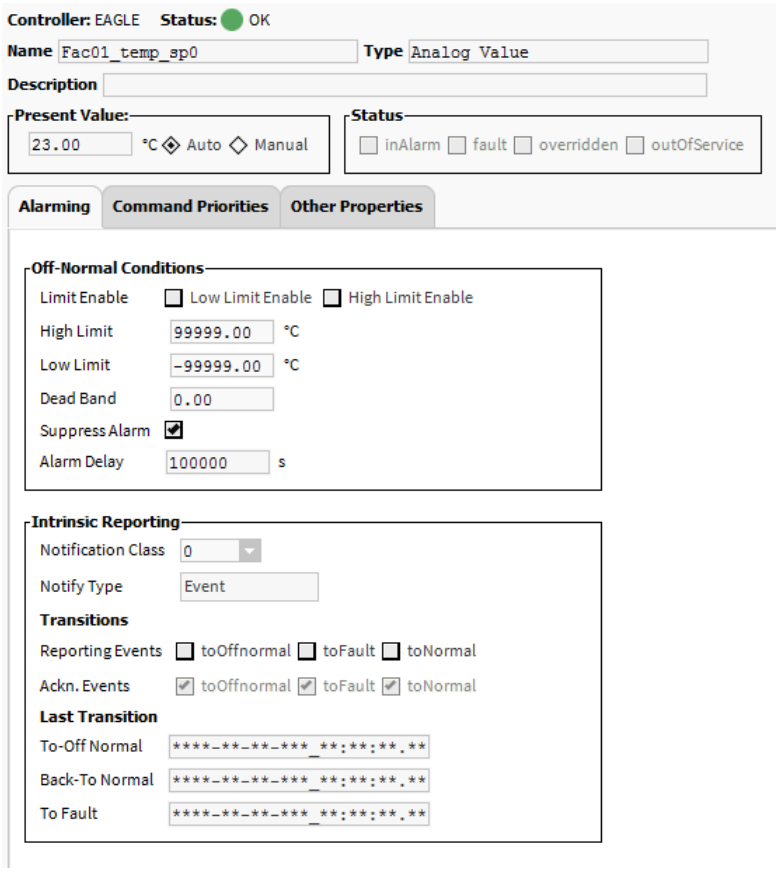
In the CentraLine NX workbench different views for datapoint properties are provided. This allows working either in the standard Niagara AX view or in the Honeywell BACnet view. In the following, the Honeywell BACnet views are described. In order to use the Honeywell BACnet views, the ´HonBACnetService` must be enabled before.

Datapoints can be viewed in 2 different modes selectable in the context menu:

- Hon BACnet Point Properties View
- Hon Data Point View

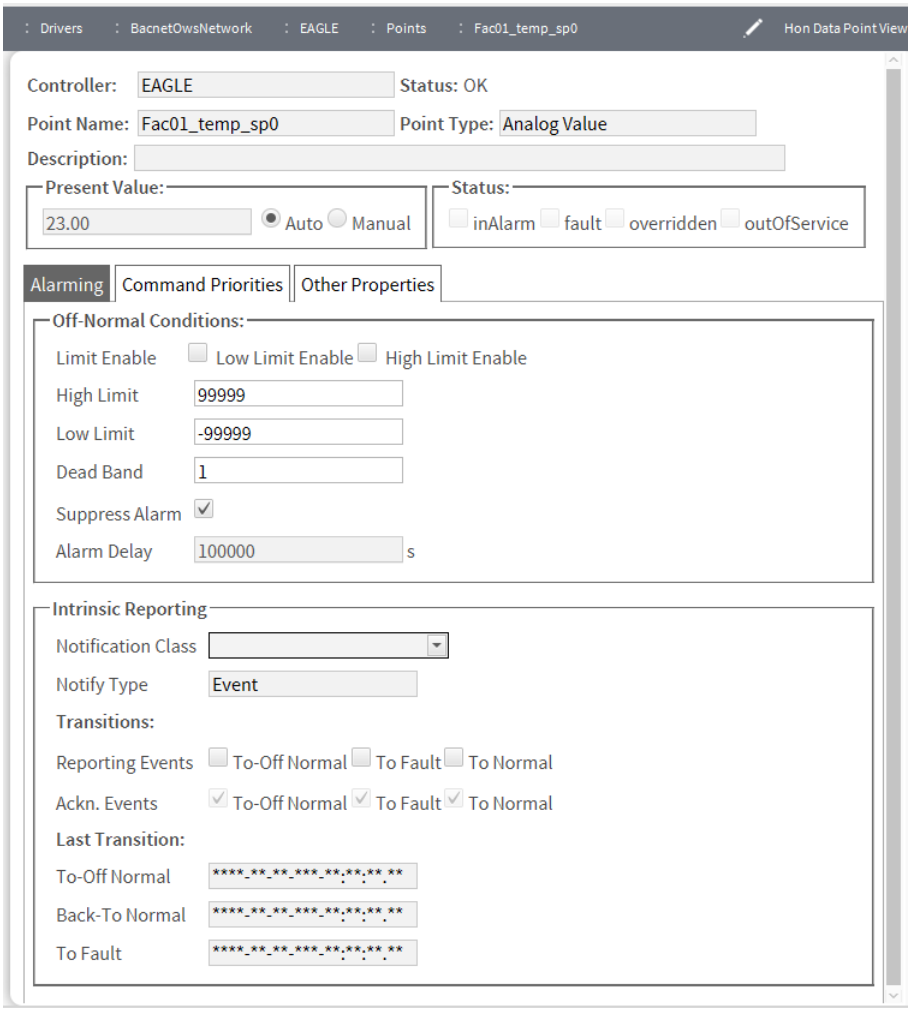


Hon BACnet Point Properties
The datapoint properties in the Hon BACnet Point Properties view look as follows:



NOTE: The following procedures descriptions are based on this view.

Hon Data Point View
Shows the datapoint properties in Web browser design.
The datapoint properties in the Hon Data Point View look as follows:



Procedures

Start with the "General Procedure" which describes the first step for viewing and editing the properties of a datapoint.

See "General Procedure" section.

Apply any of the particular procedures according to your needs.

"General Properties"
- View properties such as description, present value and status flags
- Override present value manually

See "View / Edit General Properties" section.

Alarming
- Enable/disable alarming
- Enable/disable intrinsic reporting
- Set Off-Normal conditions

See "Alarming Procedures"

Command Priorities
- View command priorities states
- Change relinquish default value

See "View Command Priorities / Change Relinquish Default" section

Other Properties
- View common properties such as event state, reliability, read and write access level

- View and change particular datapoint dependent properties such as COV increment, sensor offset, safety position, etc.

See "View / Change Particular Datapoint Properties" section

Counters

- View and reset state counter and runtime counter

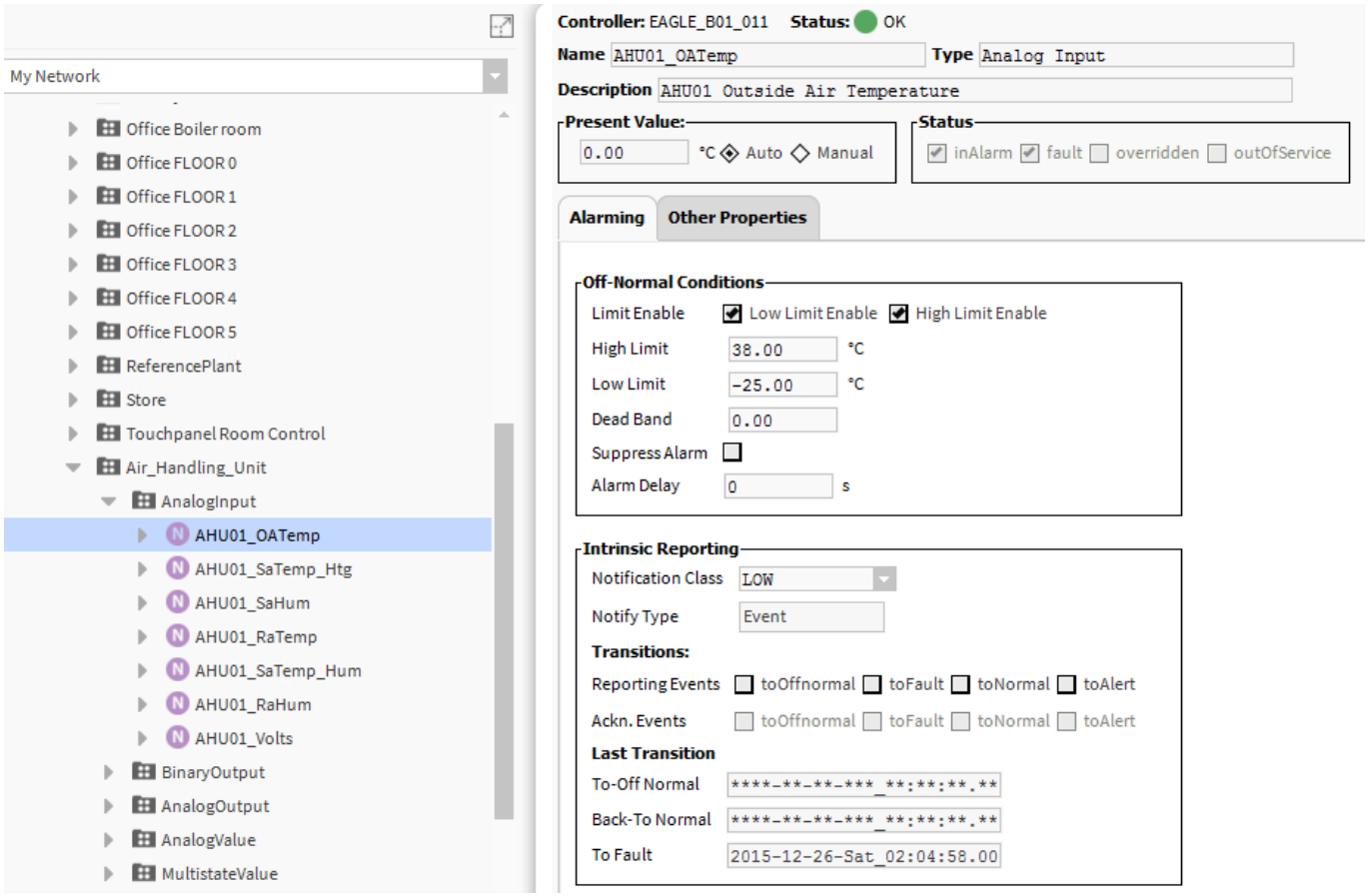
See "View / Reset Counters" section

General Procedure

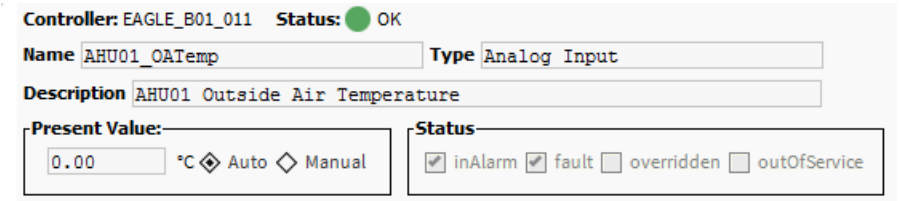
The following procedure gives a short and general overview on how to view and edit the properties of a datapoint.

Procedure

1. To view/edit the properties of a datapoint, double-click the datapoint in the *Points* folder of the *Nav side bar*.

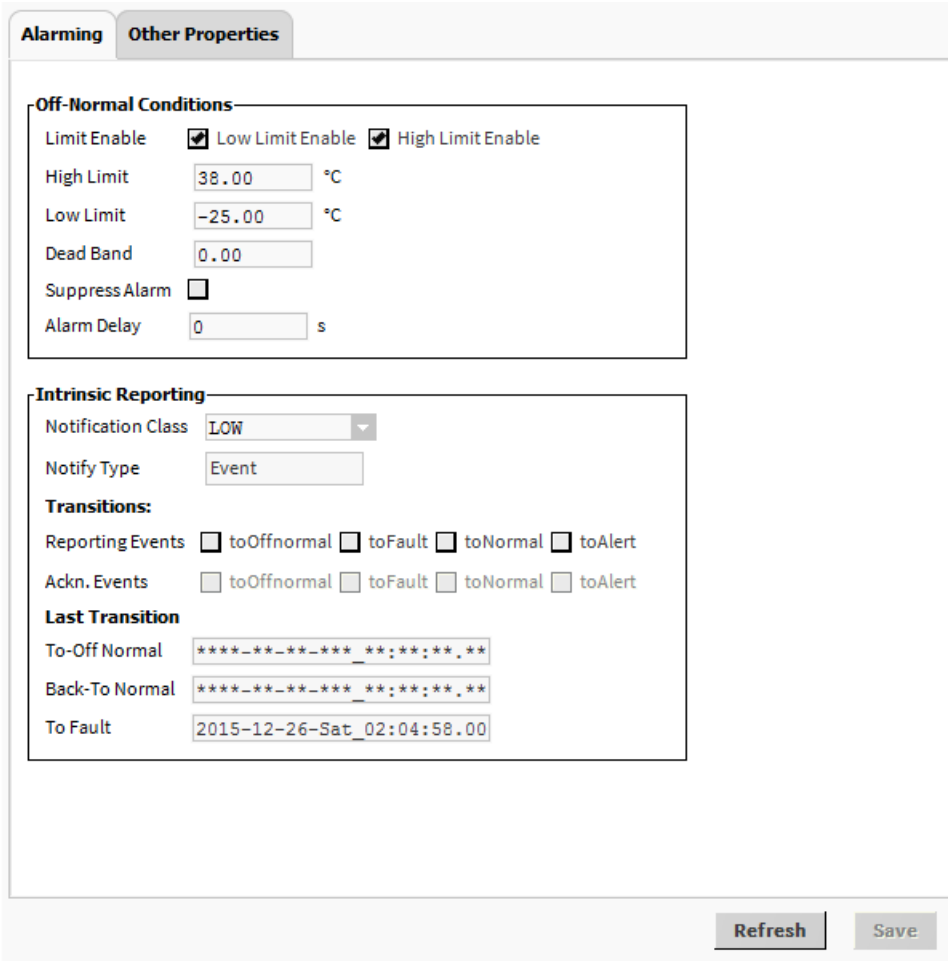


RESULT: On the right pane, the properties of the datapoint are displayed. On the top, General properties such as name, description, present value etc. and status flags are shown.



Depending on the datapoint type, further properties are arranged on the *Alarming*, *Command Priorities,* Counters, and *Other Properties* tabs.

NOTE: Some fields are for display only. Others can be edited.
The display of the tabs is dependent on the datapoint type.
For some datapoint types, particular tabs are not available.



2. To change a datapoint property, choose the present value field in the General properties or if necessary, select a tab and choose the desired field there, enter/select the value, and then click the **Save** button Save at the bottom. This writes the value to the controller.

   To upload the present value from the controller, click the **Refresh** button Refresh at the bottom. This overwrites **all** values to ARENA NX / COACH NX if these values are different to the values in the controller.

3. Continue by applying any of the particular procedure(s) as described in the following.

View / Edit General Properties

This procedure includes the following:

- View properties such as description, status flags, and present value
- Override present value manually

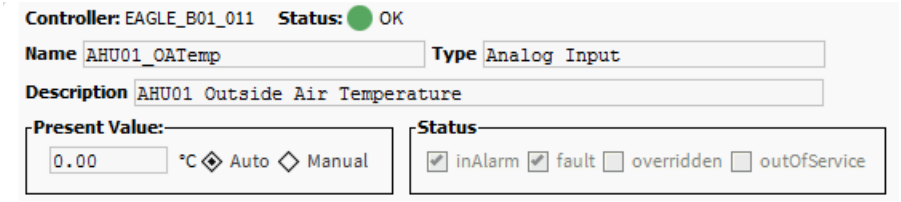
View Status Flags

NOTE: This procedure applies to all datapoint types.

Procedure

1. Display the datapoint properties as described in the "General Procedure" section.

RESULT: On the right pane, the status flag settings are shown under **Status**. Active status flag are checked, inactive status flags are unchecked.



2. If desired, continue by changing the present value as described in the "Change Present Value" section.

3. If desired, continue by viewing / editing particular settings on any of the following tabs:

   – Alarming
   – Command Properties
   – Other Properties

   Refer to the corresponding subsequent sections.

Change Present Value

NOTE: This procedure applies to all datapoint types.

Procedure

1. Display the datapoint properties as described in the "General Procedure " section.

   RESULT: On the right pane, the properties of the datapoint are displayed.

   Controller
   Shows the name of the controller

   Status
   Shows the status of the controller (OK, Down, Disabled)

   Name
   Shows the name of the datapoint

   Type
   Shows the type of the datapoint

   Description
   Shows a description of the datapoint if entered in CARE (optional)

   Present Value
   Shows the present value. To change the present value, see step. 2.

   Status
   Shows the status flags settings.

2. To change the present value, click the Manual checkbox, enter the value, and then click the **Save** button at the bottom. This writes the value to the controller.

   To upload the present value from the controller, click the **Refresh** button at the bottom. This overwrites the currently displayed value if the values are different.

3. If desired, continue by viewing / editing settings on any of the following tabs:

   – Alarming
   – Command Properties
   – Other Properties
   – Chart

Refer to the corresponding subsequent sections.

Alarming Procedures

These procedures include the following tasks:

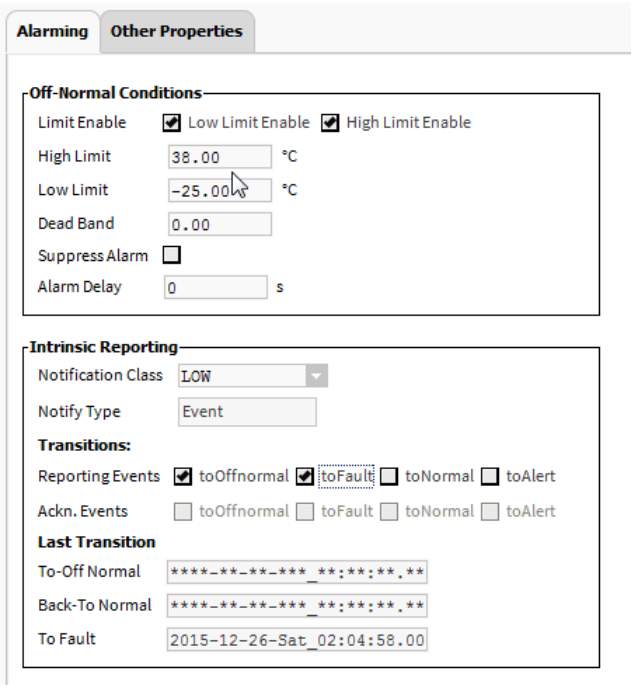
- Set Off-Normal conditions
- Enable/disable intrinsic reporting

Set Off-Normal Conditions

Procedure

1. Display the datapoint properties as described in the "General Procedure" section, step 1.

   RESULT: On the right pane, select the *Alarming* tab.



***Alarming* tab example "Analog Input"**

2. Under **Off-Normal Conditions** do any of the following.

   All datapoint types:

   Suppress Alarm
   - Check the **Suppress Alarm** dialog box to disable alarming.
   - Or, uncheck the **Suppress Alarm** dialog box to enable alarming.
   - Click **Save** button.

   Alarm Delay
   - Enter the alarm delay value in seconds in the **Alarm Delay** field (disabled if suppress Alarm is enabled)
   - Click **Save** button.

   AI, AO, and AV datapoint types:

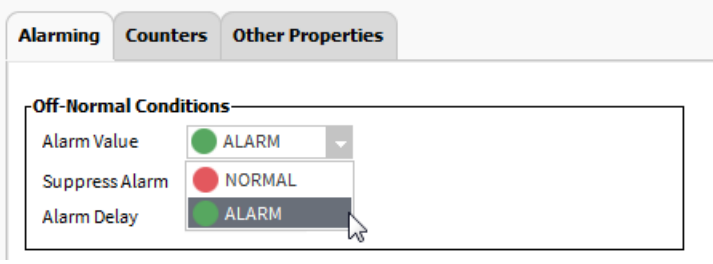
   Limit Enable – High Limit – Low Limit
   - Check **Low Limit Enable** and enter the value in the **Low Limit** field
   - Check **High Limit Enable** and enter the value in the **High Limit** field
   - Click **Save** button.

   Dead Band
   - Enter the value of the dead band.
   - Click **Save** button.

BI and BV datapoint types:

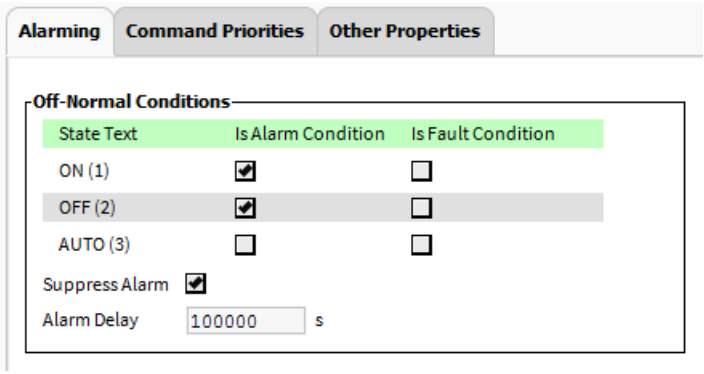
Alarm Value

- From the **Alarm Value** drop-down listbox, select the alarm value setting.
- Click **Save** button.



MI and MV datapoint types:

State Text – Is Alarm Condition – Is Fault Condition
Here the states are displayed which represent and set off an ´Alarm` and/or a ´Fault` event.



3. If desired, continue by viewing / editing settings on any of the following tabs:

   – Command Properties
   – Other Properties
   – Chart

   Refer to the corresponding subsequent sections.

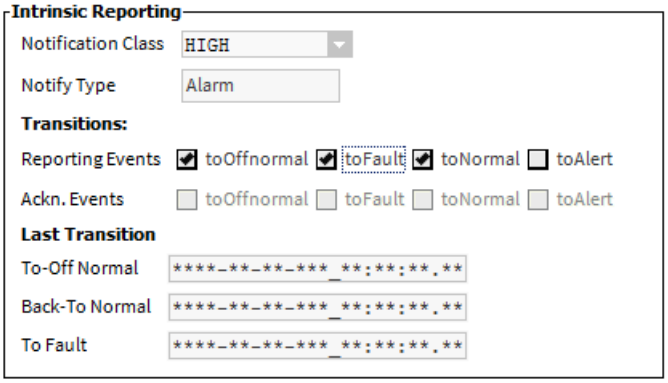
Enable / Disable Intrinsic Reporting

NOTE: This procedure applies to all datapoint types, except the BO datapoint.

Procedure

1. Display the datapoint properties as described in the "General Procedure" section, step 1.

   RESULT: On the right pane, select the *Alarming* tab.



2. Under **Intrinsic Reporting** do any of the following.

   Notification Class
   Allows selecting the notification class.

   Notify Type
   Displays the notification class and the notify type.

   Transitions
   - Check the transition types you want to be reported from **toOffnormal**, **toFault**, and **ToNormal**. The reported transitions will be saved in the alarm buffer and in the alarm list.
   - Click **Save** button.

   Ack. Events
   Each transition is unacknowledged (unchecked) by default.

   Last Transition
   Here the dates (timestamp) of the last transitions are shown in the **To-Off Normal**, **Back-To Normal** and **To Fault** fields.

3. If desired, continue by setting off-normal conditions as described in the "Set Off-Normal Conditions" section.

4. If desired, continue by viewing / editing settings on any of the following tabs:

   – Command Properties
   – Other Properties

   Refer to the corresponding subsequent sections.

View Command Priorities / Change Relinquish Default

NOTE: This procedure applies to AO, AV, BO, BV, MO, and MV datapoint types only.

This procedure includes the following:

- View command priorities states
- Change relinquish default value

Procedure

1. Display the datapoint properties for the corresponding datapoint type as described in the "General Procedure" section.

   RESULT: On the right pane, the properties of the datapoint are displayed. By default, the *Command Priorities* tab is selected. The priority levels with their current values are shown.

2. To change the relinquish default value, do any of the following:

   a. for binary and multi-state points, select the value in the **Relinquish Default** drop- down listbox.

   b. for analog points, enter the value in the **Relinquish Default** field.

3. Click the **Save** button.

   This function can also be executed by using the Set command for the datapoint as described in the subsequent "Set Datapoint Value" section.

Set Datapoint Value

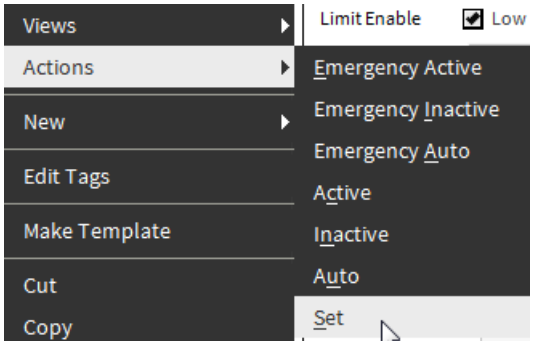
NOTE: This procedure applies to all datapoint types, except the AI datapoint type.

Purpose Sets the relinquish default value of the datapoint. The relinquish value of a datapoint defines the value that will be written to the present value if the priority array is empty which means that no other value is present in the priority array. The relinquish default value allows starting up a control system with a defined status/value.

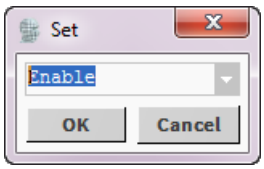
Procedure

1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the *Points* folder.

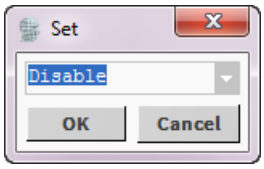
2. Right-click the datapoint, click **Actions** and then click **Set** in the context menu.



RESULT: The Set dialog box displays.



3. Enter the fallback value.



4. Click OK.

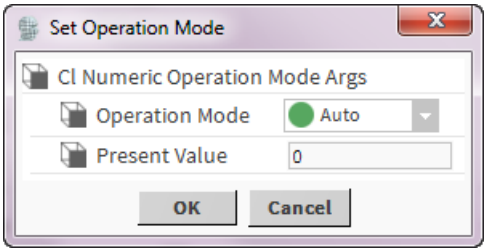
RESULT: The **Fallback** field and the **Out** field are updated with the defined value.

Set Operating Mode - Change Present Value

NOTE: These procedure applies to the AI datapoint type only.

1. Right-click the analog input datapoint in the *Nav side bar*, then click **Actions**, and then click **Set Operating Mode** in the context menu.

2. In the *Set Operating Mode dialog* box, select the operating mode, and if ´Manu` has been selected, enter the present value.



3. Click **OK**.

4 If desired, continue by viewing / editing settings on any of the following tabs, e.g.:

- Alarming
- Counters
- Other Properties
- Event Enrollments

Refer to the corresponding subsequent sections.

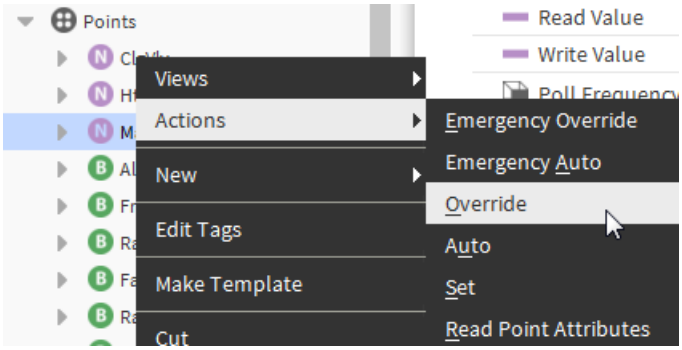
Setting Datapoint into Manual Mode (Manual Override)

Purpose Sets the datapoint into Manual operating mode and overwrites the present value with a defined value entered manually. This command is executed on priority level In8.

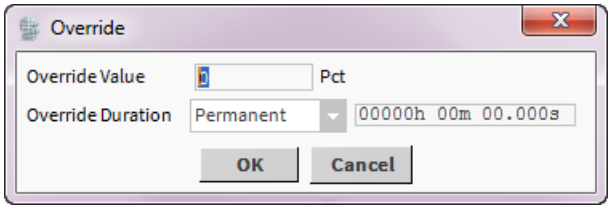
NOTE: This procedure applies to all datapoint types, except the AI datapoint type.

Procedure

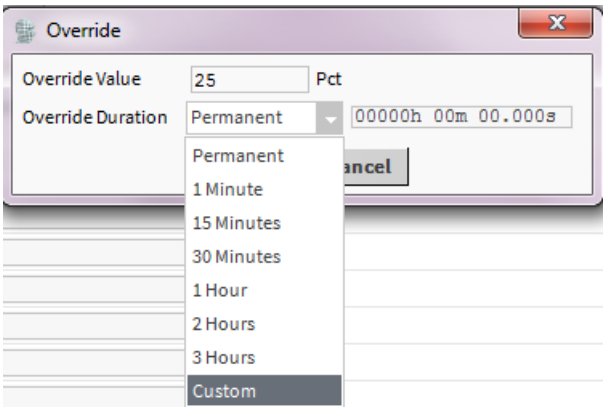
1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the *Points* folder.
2. Right-click the datapoint, click **Actions** and then click **Override** in the context menu.



RESULT: The *Override* dialog box displays.



3. In the **Override Value** field, enter the value.



4. From the **Override Duration** drop-down listbox, select the duration.
5. Click the **OK** button.

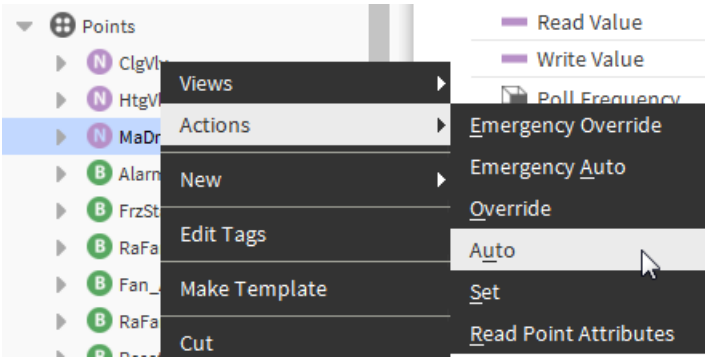
Setting Datapoint from Override Mode into Auto Mode

Purpose Sets a datapoint that is in override (manual) mode into Automatic mode.

NOTE: This procedure applies to all datapoint types, except the AI datapoint type.

Procedure

1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the *Points* folder.
2. Right-click the datapoint, click **Actions** and then click **Auto** in the context menu.



Setting Datapoint into Manual Mode with highest Priority (Emergency Override)

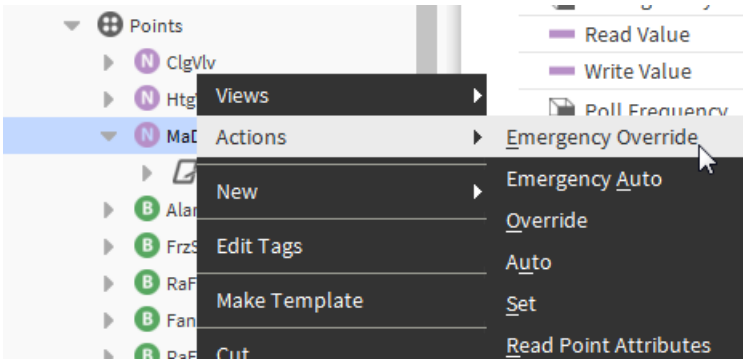
Purpose

Sets the datapoint into manual operating mode and overwrites the present value with a defined value entered manually. This command is executed on priority level In1.

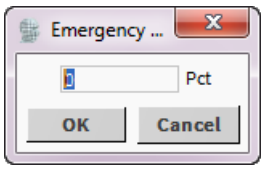
NOTE: This procedure applies to all datapoint types, except the AI datapoint type.

Procedure

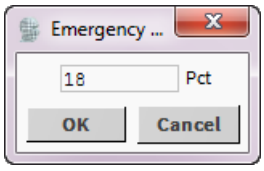
1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the *Points* folder.
2. Right-click the datapoint, click **Actions** and then click **Emergency Override** in the context menu.



RESULT: The *Emergency* dialog box displays.



3. Enter the value.



4. Click the **OK** button.

´overridden` is displayed. The **Out** field shows the manual value as the current value. The **Operating Mode** field shows the mode ´Manual`.

Setting Datapoint from Emergency Override into Emergency Auto Mode

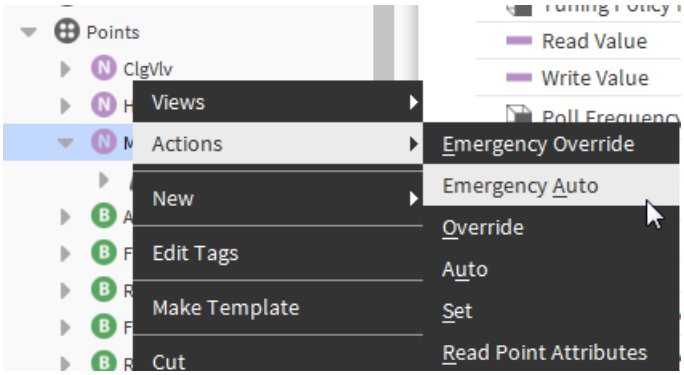
Purpose

Sets a datapoint that is in emergency override mode into Automatic mode.

NOTE: This procedure applies to all datapoint types, except the AI datapoint type.

Procedure

1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the *Points* folder.
2. Right-click the datapoint, click **Actions** and then click **Emergency Auto** in the context menu.



View / Change Particular Datapoint Properties

This procedure includes the following:

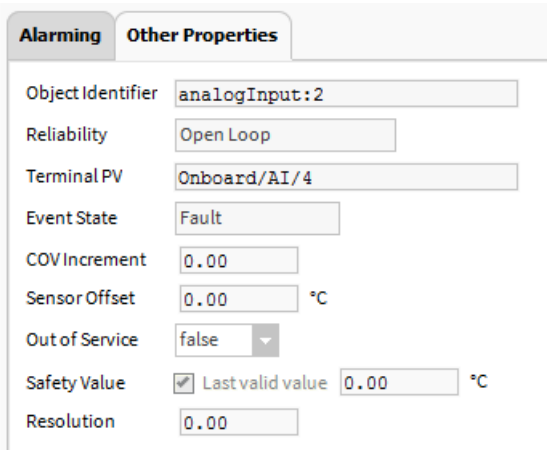
- View common properties such as event state, reliability, read and write access level
- Change particular datapoint dependent properties such as COV increment, sensor offset, safety position, etc.

NOTE: Viewing common properties applies to all datapoints. Changing particular datapoint properties is dependent on the datapoint type and does not apply to any datapoint.

Procedure

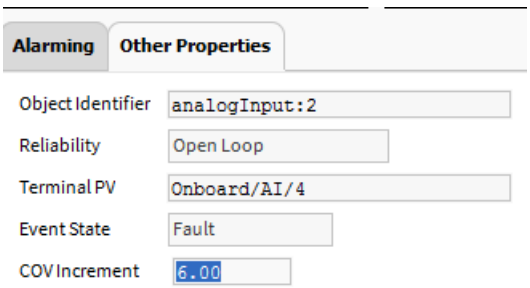
1. Display the datapoint properties for the desired datapoint as described in the "General Procedure" section.

   RESULT: On the right pane, the properties of the datapoint are displayed. For detailed information of the particular properties please refer to the "BACnet Datapoint Properties Descriptions" section.



   In the following, the change of the COV Increment value is described as an example.

2. In the COV Increment field, enter a new value.



3. Click the **Save** button.
4. If desired, continue by viewing / editing settings on any of the following tabs:
   - Alarming
   - Event Enrollments

   Refer to the corresponding subsequent sections.

View / Reset Counters

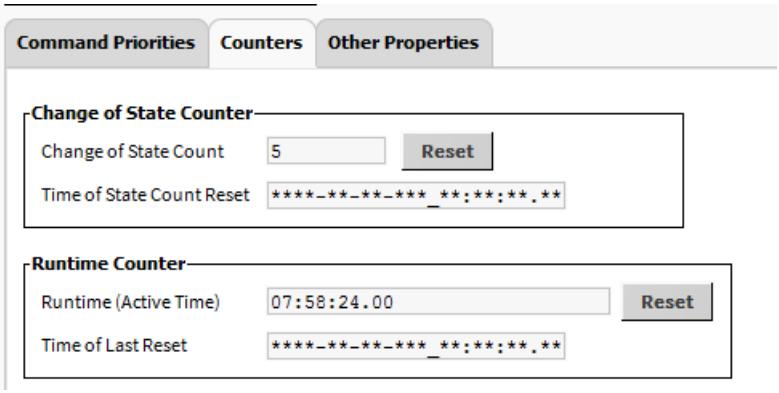
NOTE: This procedure applies to BI, BO, and BV datapoint types only.
This procedure includes the following:

- View and/or reset state and/ or runtime counters

Procedure

1. Display the datapoint properties as described in the "General Procedure" section.

   RESULT: On the right pane, the properties of the datapoint are displayed.
2. Select the *Counters* tab.



   Under **Change of State Counter**, the number of state changes is displayed.
   Under **Runtime Counter**, the active runtime is displayed.
3. To reset the state counter to ´0`, click the **Reset** button right to the **Change of State Count** field.
4. To reset the runtime to ´0`, click the **Reset** button right to the **Runtime (Active Time)** field.
5. If desired, continue by viewing / editing settings on any of the following tabs:
   - Command Properties
   - Other Properties
   - Event Enrollments

   Refer to the corresponding subsequent sections.

Summary

The following table gives an overview of the BACnet properties for all datapoint types:

- AI (analog input)
- AO (analog output)
- AV (analog value)
- BI (binary input)
- BO (binary output)
- BV (binary value)
- MI (multi-state input)
- MO (multi-state output)
- MV (multi-state value)

	Datapoint Type								
Datapoint Property	**AI**	**AO**	**AV**	**BI**	**BO**	**BV**	**MI**	**MO**	**MV**
"General"									
Present Value									
auto, manual	x	x	x	x	x	x	x	x	x
Status									
in alarm	x	x	x	x	x	x	x	x	x
fault	x	x	x	x	x	x	x	x	x
overridden	x	x	x	x	x	x	x	x	x
out of service	x	x	x	x	x	x	x	x	x
Alarming									
Off-Normal Conditions									
low limit enable	x	x	x						
high limit enable	x	x	x						
low limit	x	x	x						
high limit	x	x	x						
dead band	x	x	x						
alarm value				x		x			
state text							x		x
suppress alarm	x	x	x	x		x	x		x
alarm delay	x	x	x	x		x	x		x
Intrinsic Reporting									
notification class	x	x	x	x	x	x	x	x	x
notify type	x	x	x	x	x	x	x	x	x
Transitions									
reporting events	x	x	x	x	x	x	x	x	x
ackn. events	x	x	x	x	x	x	x	x	x
Last transition									
to-off normal	x	x	x	x	x	x	x	x	x
back-to normal	x	x	x	x	x	x	x	x	x
to fault	x	x	x	x	x	x	x	x	x
Command Priorities									
relinquish default		x	x		x	x		x	x
Other Properties									
object identifier	x	x	x	x	x	x	x	x	x
reliability	x	x	x	x	x	x	x	x	x
event state	x	x	x	x	x	x	x	x	x
terminal PV	x	x		x	x		x	x	
out of service	x	x	x	x	x	x	x	x	x
COV increment	x	x	x						
currently active priority		x	x		x	x		x	x
EOH / EOV optimization flag			x			x			x

	Datapoint Type								
Datapoint Property	**AI**	**AO**	**AV**	**BI**	**BO**	**BV**	**MI**	**MO**	**MV**
datapoint is setpoint			x			x			x
polarity				x	x				
resolution	x	x							
safety position		x			x				
direct reverse		x							
safety value	x			x					
sensor offset	x								
read access level	x	x	x	x	x	x	x	x	x
write access level	x	x	x	x	x	x	x	x	x
Counters									
Change of State Counter									
change of state count				x	x	x			
time of state count reset				x	x	x			
Runtime Counter									
runtime (active time)				x	x	x			
time of last reset				x	x	x			

Detailed Descriptions

This section describes all BACnet datapoint properties in detail. Each property description starts with a table that explains:

- which datapoints the property applies to
- if the property is editable

Example: The following table explains the **Alarm Delay** property. In this case the property applies to the BI and BV datapoint types. It can be edited.

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

The table is followed by the detailed description of the property.

"General"

"General" properties are the following:

- controller
- status
- name
- type
- description
- present value
- status flags

Controller

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the name of the controller

Status

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the status of the controller

Name

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the name of the datapoint.

Type

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the type of the datapoint e.g. analog input.

Description

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows an optional description of the datapoint entered in CARE.

Present Value

Auto

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Sets the datapoint in automatic (Auto) operation mode. In Auto operation mode, the datapoint shows the present value processed by the controller (sensor input values, time program output values).

Manual

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	x								

Sets the datapoint in manual operation mode in which the present value will be overwritten with a desired value manually entered by the user.

Status Flags

- In Alarm
  Datapoint is in alarm. Cause can be faults, Off-normal conditions, and life-safety alarm.
- Fault
  The datapoint or the physical input is not reliable, e.g. in case of sensor break (Open Loop).
- Overridden
  Present value is overridden manually
- Out of Service
  Physical input is decoupled from the datapoint, e.g. in case of manual override. The present value displayed is not the present value, which would be delivered by the physical input.
-

NOTE: Multiple flag indications are possible.

Fault

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Indicates the ´Fault` status of the datapoint.

When the ´Fault` status flag is enabled, the datapoint or the physical input is not reliable, e.g. in case of sensor break (Open Loop). See “Status Flag Indications” for details.

NOTE: Multiple flag indications may be possible.

Alarm reporting of Faults
The ´Fault` status of a point will generate an alarm if a notification class is selected.

Example: A ´To-Fault transition` will always enable the ´In Alarm` flag. Hence both, the ´In Alarm` and the ´Fault` status flags are enabled.

In Alarm

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Indicates the ´Alarm` status of the datapoint.

Displays the alarm status of the datapoint, which can be caused by faults and Off-Normal conditions.

NOTE: Multiple flag indications may be possible.

Example: A ´To-Fault transition` will always enable the ´In Alarm` flag. Hence both, the ´In Alarm` and the ´Fault` status flags are enabled.

Out Of Service

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Indicates the ´out of service` status of the datapoint.

The ´out of service` property allows decoupling the physical input or output from the datapoint.

For inputs the decoupling is done by manual override. For outputs this is done by checking the ´Out of Service` flag.

The ´out of service` property is suited to fix the physical input or output state, e.g. in case of checks.
In the following, the states of the ´out of service` flag/property of the various BACnet objects is listed:

AI, BI, MI
Out Of Service = unchecked:
Present value has not been overwritten

Out Of Service = checked:
Present value has been overwritten
Present value is decoupled from the physical input and will not track changes to the physical input.

AO, BO, MO
Out Of Service = checked:
Changes to the present value are decoupled from the physical output.
The present value property is still controlled by the prioritization mechanism (Priority Array, Relinquish Default)

AV, BV, MV
Out Of Service = checked:
Present value is prevented from being modified by the application.
The present value property is still controlled by the prioritization mechanism (Priority Array, Relinquish Default)

Pulse Converter
Out Of Service = unchecked:
Present value has not been overwritten

Out Of Service = checked:
Present value has been overwritten
Present value is decoupled from the Count property and will not track changes to the input.

Overridden

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Indicates the ´overridden` status of the datapoint.

If checked the datapoint is in manual operation mode and its value has been overwritten.

NOTES: When an AI datapoint is set into Manual mode and its value will be overwritten, the ´overridden` and ´out of service` flag will be set (see Status). The set out of service flag indicates that the datapoint is decoupled from the physical input (sensor) to prevent a sensor value from instantly overwriting the manual value in the next scan cycle.

When an AO datapoint is set into Manual mode, its current value will be overwritten by the manual value that has a higher priority (8). As long as no other process of higher priority writes to the analog output, the manual value is present. The overridden flag will be set (see Status).

If AO and BO datapoints are created with switches, the manual override control of the modules are reflected in the command priorities (level 1 = manual life safety).

Switching a point between Auto and Manu operating mode only causes an alarm if the value or state is in the Off-Normal range or status, and if the alarming is enabled.

Alarming

"Alarming" properties are the following:

- low limit enable
- high limit enable
- low limit
- high limit
- dead band
- alarm value
- state text
- suppress alarm
- alarm delay
- notification class
- notify type
- reporting events
- ackn. events
- to-off normal
- back-to normal
- to fault

High Limit Enable

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

The High Limit Enable property defines if high limit alarms are generated on the BACnet bus. The following conditions must be true for the system to generate an alarm:

- High limit is exceeded and this condition present for at least the defined alarm delay (time)
- Transition events ´To-OffNormal` and ´To-Normal` are enabled
- Notification class (urgent, high or low) is allocated to this point
- Notify type is set to ´Alarm` (not ´Event`)

If all of these conditions are true, then an alarm of event type ´To-Off-Normal` is set off.

The high limit can be predefined in CARE and changed in the NX component later.

NOTE: According to the BACnet standard, disabling the High Limit does only disable the reporting of the High Limit Alarm onto the BACnet bus. When the High Limit is exceeded, the datapoint will still be “in Alarm”, and if a BACnet front-end is polling the alarms of a BACnet controller, also datapoints with High Limit disabled will be displayed on the BACnet front-end as being “in Alarm”.

With the Excel Web II / Eagle controller it is possible to disable both High and Low Limit alarms at the same time, if the alarm delay time is set to 100,000 sec or longer.

Low Limit Enable

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

The Low Limit Enable property defines the low limit for the creation of alarms of analog points. The following conditions must be true for the system to generate an alarm:

- The present value falls below the low limit and this condition represent for at least the defined alarm delay (time)
- Transition events ´To-OffNormal` and ´To-Normal` are enabled
- Notification class (urgent, high or low) is allocated to this point
- Notify type is set to ´Alarm` (not ´Event`)

If all of these conditions are true, then an alarm of event type ´To-Off-Normal` is set off.

The Low Limit can be predefined in CARE and changed in the NX component later.

NOTE: According to the BACnet standard, disabling the Low Limit only disables the reporting of the Low Limit Alarm onto the BACnet bus. When the Low Limit is exceeded, the datapoint will still be "in Alarm", and if a BACnet front-end is polling the alarms of a BACnet controller, also datapoints with Low Limit disabled will be displayed on the BACnet front-end as being “in Alarm”. With the Excel Web II / Eagle controller it is possible to disable both High and Low Limit alarms at the same time, if the alarm delay time is set to 100,000 sec or longer.

State Text

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Multistate datapoints allow switching 256 states (stages) including the “off stage" of physical digital inputs or outputs. For each state, a state text can be created and assigned to the point in CARE. The state text is displayed on the NX component when the point switches the input or output to the corresponding state (stage).

Example: Multi-stage fan with state texts: stage 1, stage 2, stage 3, etc.

Deadband

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Defines the value of the deadband in order to set off an alarm of event type ´To-Normal`. For this, the present value must, for at least the defined alarm delay (time), within the range:

```
Low limit plus deadband and high limit minus deadband
```

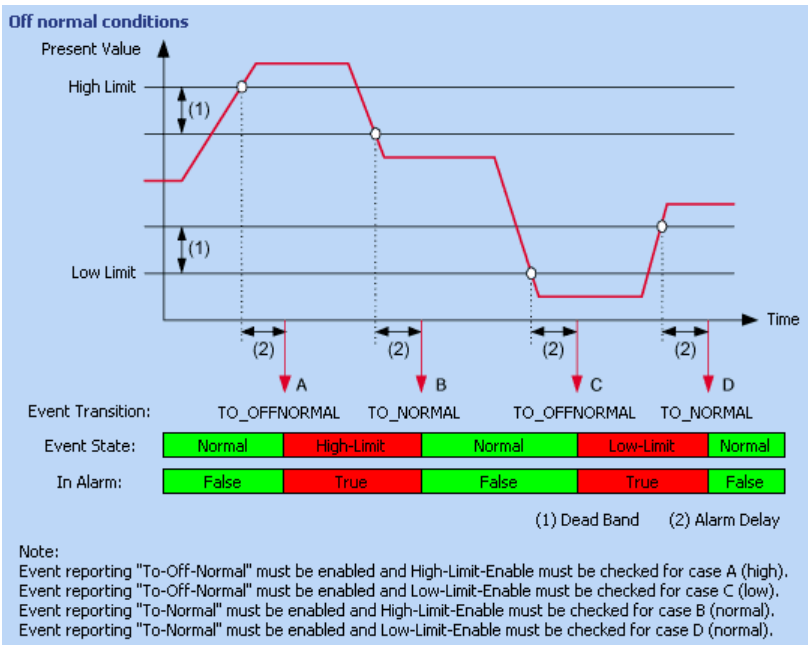


Fig. 2. Deadband (1) of analog datapoints

Alarm Value

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Defines the alarm condition of a binary input or value point when an alarm should be reported in case of binary input changes. The alarm condition can be either the active state or the inactive state of the point e.g. 0 or 1, ON or OFF, Up or Down, etc.. If the present value is equal to this condition for at least the alarm delay time, then an OFF-Normal event is generated. In addition, an alarm delay can be entered.

Suppress Alarm

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Enables/disables alarming for a datapoint.

Alarm Delay

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

The alarm delay determines how long a ´To-Off-Normal` or a ´To-Normal` transition must exist before an alarm is generated. Entering an alarm delay time of 10 seconds means that the limit value must be exceeded for at least 10 seconds before this datapoint generates an alarm. If the limit value only lasts for 7 seconds, then no alarm occurs. The alarm handling for a datapoint can be completely disabled by setting the alarm delay time to a value of 100000 or higher.

Notification Class

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Displays the notification class defined in CARE. The notification class enables alarming for the datapoint by selecting a notification class with a given priority. By default, the following notification classes with descending priority can be selected:

- Urgent
- High
- Low
- Journal

These default notification classes match the default notification classes of the BACnet client.

Each recipient assigned to a notification class will receive the datapoint alarm triggered by the selected notification. But, alarms will only be generated for the enabled transitions (To-Normal, To-OffNormal, and/or To-Fault) of a recipient. Each enabled transition will be propagated with the selected notification.

Notify Type

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

The notify type can be defined and changed in CARE. In the NX component, the notify type (alarm type) is displayed only.

NOTE: For all notification classes, the notify type ´Alarm` must be used.

According to the BACnet Specification, events can be of the type ´alarm` or ´event`. On the BACnet client, alarms will be graphically indicated by blinking in the status line and shown in the alarm summary. Events will not be indicated in the status line and will be shown in the event summary.

Reporting Events

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Defines which transition type (To-Off-Normal, Back To-Normal, and/or To Fault) will be reported and tracked by time stamping. Transitions will be saved in the alarm buffer and in the alarm list.

The timestamps can be seen under Transitions.

Ackn. Events

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows whether a transition has been acknowledged or not. By default, each transition will be acknowledged by the controller and the Ackn. Property is checked.

Last Transition

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows date of the last transition for the To-Off Normal, Back-To Normal and To Fault events.

To-Off Normal

Describes the To-Off Normal event state and transition type, respectively.

Transition Events

Whenever the event state of a datapoint changes, an alarm is generated by one of the following transition events:

Back To-Normal
The alarm is going to normal operating state, that is, the value of the datapoint returns under the high limit, or exceeds the low limit.

To Off-Normal
The alarm reaches off-normal state, that is, the datapoint value exceeds the high limit, or returns under the low limit.

To Fault
The alarm originates in a (physical) fault such as sensor break, etc.

Any alarm caused by a transition event is indicated by the enabled ´Alarm` status flag.

Back-To Normal

Describes the Back-To Normal event state and transition type, respectively.

Transition Events

Whenever the event state of a datapoint changes, an alarm is generated by one of the following transition events:

Back To-Normal
The alarm is going to normal operating state, that is, the value of the datapoint returns under the high limit, or exceeds the low limit.

To Off-Normal
The alarm reaches off-normal state, that is, the datapoint value exceeds the high limit, or returns under the low limit.

To Fault
The alarm originates in a (physical) fault such as sensor break, etc.

Any alarm caused by a transition event is indicated by the enabled ´Alarm` status flag.

To Fault

Describes the Fault event state and transition type, respectively.

Transition Events

Whenever the event state of a datapoint changes, an alarm is generated by one of the following transition events:

Back To-Normal
The alarm is going to normal operating state, that is, the value of the datapoint returns under the high limit, or exceeds the low limit.

To Off-Normal
The alarm reaches off-normal state, that is, the datapoint value exceeds the high limit, or returns under the low limit.

To Fault
The alarm originates in a (physical) fault such as sensor break, etc.

Any alarm caused by a transition event is indicated by the enabled ´Alarm` status flag.

Other Properties

"Other" properties are the following:

- object identifier
- reliability
- event state
- terminal PV
- out of service
- COV increment
- currently active priority
- EOH / EOV optimization flag
- datapoint is setpoint
- polarity
- resolution
- safety position
- direct reverse
- safety value
- sensor offset
- read access level
- write access level

Object Identifier

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

The BACnet object ID is part of the internal BACnet addressing in every BACnet system (BACnet communication). The BACnet object ID is a unique ID within a BACnet device.

BACnet Object IDs must be provided by or to the project engineer/vendor who is responsible for the 3rd party BACnet device to be added to the CARE project, or who is responsible for integrating the Excel Web II / Eagle controller controller into a 3rd party BACnet system.

The BACnet object ID will be kept unique within a CARE project and is calculated within CARE by the following Standard BACnet formula:

BACnet object ID = BACnet object type x 2^{22} + Object Instance number

The typical object addressing within a BACnet system is done by using the device ID and the Object ID.

Reliability

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows whether the hardware assigned to the datapoint is in proper condition or not. Depending on the datapoint type, the following conditions may be displayed:

No Error Detected	Loop is in proper condition, that is, present value is reliable; that is, no other fault has been detected.
No Sensor	Sensor may be not connected
No Output	Hardware may be not connected
Unreliable Other	The controller has detected that the present value is unreliable, but none of the other conditions describe the nature of the problem. A generic fault other than those listed above has been detected, e.g., a Binary Input is not cycling as expected.

NOTE: For binary output datapoints, the reliability will work only if the service type of the corresponding NVo in CARE is set to ´acknowledged`.

Event State

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

For any datapoint type, an application and/or product specific value range is defined in which the point is in the operating (event) state ´Normal`. If the point value has changed due to exceptional situations, the event state of a datapoint can be either ´Off-Normal` or ´Fault`.

The event states can be shortly described as follows:

Normal
Point is in normal operating state.

Off-Normal
Point value is out of normal range.

Fault
Point is prevented from proper operation. Point value can be in normal or out of normal range. Due to the maloperation of the point, the value is unreliable.

Causes for a fault can be, for example sensor and cable breaks. See “Status Flag indications for details.

High Limit (AI, AI, and AV datapoints only)
Point value has exceeded the high limit. Special case of the Off-Normal state of analog inputs, analog outputs, and analog value points (see also Alarm range properties in the table below).

Low Limit (AI, AI, and AV datapoints only)
Point value has dropped below the low limit. Special case of the Off-Normal state of analog inputs and outputs (see also Alarm range properties in the table below).

Terminal PV

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the name of the terminal to which the present value is mapped.

Out Of Service

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Generates and indicates the ´out of service` status of the datapoint. The ´out of service` property allows decoupling the physical input or output from the datapoint.

For inputs the decoupling is done by manual override. For outputs this is done by checking the ´Out of Service` flag.

The ´out of service` property is suited to fix the physical input or output state, e.g. in case of checks.
In the following, the states of the ´out of service` flag/property of the various BACnet objects is listed:

AI, BI, MI
Out Of Service = unchecked:
Present value has not been overwritten

Out Of Service = checked:
Present value has been overwritten
Present value is decoupled from the physical input and will not track changes to the physical input.

AO, BO, MO
Out Of Service = checked:
Changes to the present value are decoupled from the physical output.
The present value property is still controlled by the prioritization mechanism (Priority Array, Relinquish Default)

AV, BV, MV
Out Of Service = checked:
Present value is prevented from being modified by the application.
The present value property is still controlled by the prioritization mechanism (Priority Array, Relinquish Default)

Pulse Converter
Out Of Service = unchecked:
Present value has not been overwritten

Out Of Service = checked:
Present value has been overwritten
Present value is decoupled from the Count property and will not track changes to the input.

See also "In Alarm" and "Fault" sections.

COV Increment

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

The change of value increment (COV increment) specifies the minimum change in present value that causes the controller sending the present value to recipients on the BACnet bus (e.g. NX component).

The COV increment is also used as the minimum change in the present value for value-based trending.

Currently Active Priority

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

The value of the present value is controlled by a command prioritization mechanism which is based upon a fixed number of priorities that are assigned to command – issuing entities (BACnet tasks, control strategy, time program, and manual operator inputs). Each of these entities writes to the present value with its assigned priority level. The number of priorities is arranged in a priority list of descending priority.

Example:

	Priority Level	Value
1	Manual Life Safety	-
2		-
3		-
4		-
5	Critical Equipment Control	19,5 °C
6	Minimum On Off	
7		
8	Manual Operator	21,0 °C
9		-
10		-
11		-
12		-
13		-
14		-
15	Control Program	-
16		-
	Relinquish Default	20,0 °C

The priority list can include max. 16 values and will be continuously updated by written values caused by the command-issuing entities.

The value of the highest priority level is always written to the present value as long as the priority list is not empty. If the list is empty, the user-definable relinquish default value is written to the present value.
For the example in the table, Critical Equipment Control has the highest priority and is written to the present value. As soon as the priorities 5 and 8 are relinquished e.g. via BACnet service, the relinquish default of 20, 0°C will be valid for the present value.

EOV / EOV Optimization

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Defines whether the datapoint should be optimized or not, if the datapoint is used as setpoint for energy optimized heating or ventilation (EOH or EOV).

Datapoint is Setpoint

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Displays whether the property **Setpoint** was set in CARE (true) or not (false).

Polarity

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

The polarity indicates the relationship between the physical state of the input and the logical state represented by the present value. If the polarity is NORMAL, then the ACTIVE state of the present value is also the ACTIVE or ON state of the physical input. If the polarity is REVERSE, then the ACTIVE state of the present value is the INACTIVE or OFF state of the physical Input.

Polarity	**Present Value**	**Physical State of Input**	**Physical State of Device**
NORMAL	INACTIVE	OFF or INACTIVE	not running
NORMAL	ACTIVE	ON or ACTIVE	running
REVERSE	INACTIVE	ON or ACTIVE	not running
REVERSE	ACTIVE	OFF or INACTIVE	running

Resolution

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the resolution which defines the smallest recognizable change of the present value. The smaller the value the more precise a value change can be recognized.

Safety Position

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

In case of communication failure or application stop, the device is commanded to one of the following positions if the controller does not deliver a value (no response):

Analog Ouput:

- 0 %
- 50 %
- 100 %

device is commanded to the selected percentage value

Binary Ouput:

- OFF (logical)
- ON (logical)

device is commanded to the selected logical state (name depends on state texts defintion)

- ReGeneral in current position

device is commanded to the last valid position

NOTE:
For analog outputs, the safety position is affected by the characteristic used for the controller modules. For particular characteristics there is no linear correlation between percentage value and voltage output:

DP Type	**Listbox number**	**Characteristic**	**Safety position (%) 0 50 100**	
			in DP values	**in Volts**
AO	1..10	User defined		0 5 10
AO	9	0-100%=2-10V	-25 37.5 100	0 5 10

DP Type	Listbox number	Characteristic	Safety position (%) 0 50 100	
			in DP values	in Volts
AO	10	100-0%=2-10V	125 62.5 0	0 5 10
AO	12	LINEAR GRAPH	0 50 100	0 5 10
AO	24	0-10V=0-100%	0 50 100	0 5 10
AO	25	2-10V=0-100%	0 50 100	2 6 10
DO	--	DO on AO	OFF / ON	0 10
MOT	12	LINEAR GRAPH	0 50 100	0 5 10

NOTE: The user-defined characteristics 1 through 10 can be changed; in this context, characteristics 3, 4, 5, 6, 9, 10 are pre-defined by CARE (default characteristics) and characteristics 1 and 2 are not pre-defined. The default characteristics 3 through 6 are pressure input characteristics which should not be used for an analog output.

In general, for the user-defined characteristics 1 through 10, the safety positions 0%, 50%, 100% do always mean 0V, 5V, 10V; in this context the datapoint values for characteristics 9 and 10 are deviant.

Direct/Reverse

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Allows turning the direction of a 0-10 V characteristic.

Safety Value

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

In case of communication failure or application stop, the device is commanded to one of the following positions if the controller does not deliver a value (no response):

- Last Valid Value
  device is commanded to the last valid position

- Safety Value
  device is commanded to the value entered in Safety Value (CARE)

Sensor Offset

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

The sensor offset applies only for analog input datapoints connected to panel bus or onboard IO's. It allows shifting the value.

The adjustable range is -100,000,000.0 through 100,000,000.0

It is entered in the engineering unit of the datapoints.
If the datapoint is in fault state the sensor offset is not added to the datapoint.

Read Access Level

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

The read access level can be defined and changed in CARE only. In the NX component, the read access level is displayed only.

The read access level assigned to a datapoint determines which user level can read values (properties) of that particular datapoint on the NX component.

A user who has a user level equal to or higher than the assigned read access level of the datapoint, will have this access right enabled in the NX component, all others will not.

Write Access Level

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

The write access level can be defined and changed in CARE only. In the NX component, the write access level is displayed only.

The write access level assigned to a datapoint determines which user level can write values (properties) to that particular datapoint on the NX component.

A user who has a user level equal to or higher than the assigned write access level of the datapoint, will have this access right enabled in the NX component, all others will not.

Command Priorities

"Command" properties are the following:

- relinquish default

Relinquish Default

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Defines the value that will be written to the present value, if the priority list is empty which means that no other value is present in the priority list. The relinquish default value allows starting up a control system with a defined status/value.
The relinquish default value is predefined in the application in CARE and can be changed in the NX component.

Priority Level

The value of the present value is controlled by a command prioritization mechanism which is based upon a fixed number of priorities that are assigned to command – issuing entities (BACnet tasks, control strategy, time program, and manual operator inputs). Each of these entities writes to the present value with its assigned priority level. The number of priorities is arranged in a priority list of descending priority.

Example:

	Priority Level	Value
1	Manual Life Safety	-
2		-
3		-
4		-
5	Critical Equipment Control	19,5 °C

	Priority Level	Value
6	Minimum On Off	
7		
8	Manual Operator	21,0 °C
9		-
10		-
11		-
12		-
13		-
14		-
15	Control Program	-
16		-
	Relinquish Default	20,0 °C

The priority list can include max. 16 values and will be continuously updated by written values caused by the command-issuing entities.

The value of the highest priority level is always written to the present value as long as the priority list is not empty. If the list is empty, the user-definable relinquish default value is written to the present value.

For the example in the table, Critical Equipment Control has the highest priority and is written to the present value. As soon as the priorities 5 and 8 are relinquished e.g. via BACnet service, the relinquish default of 20,0 °C will be valid for the present value.

Counters

"Counter" properties are the following:

- change of state count
- time of state count reset
- runtime (active time)
- time of last reset

Change of State Count

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Displays the number of state changes of the binary datapoint

Time of State Count Reset

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the time of the last state counter reset for the binary datapoint.

Runtime (Active Time)

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	X								

Shows the runtime of the connected device. The runtime (active time) can be changed by reset.

The runtime can be reported as follows:

In CARE, use the IDT statement to read the ´Elapsed Active Time` property of a datapoint. Compare this value to a limit value and use an additional point to report an alarm.

Time of Last Reset

Datapoint Type	AI	AO	AV	BI	BO	BV	MI	MO	MV
Editable	-								

Shows the time of the last reset of a binary output or pulse converter datapoint.

SCHEDULES AND CALENDARS

Purpose

In the following, the viewing and editing of schedules and calendars are described.

There is no special import or export schedule procedure necessary. The schedule object is automatically synchronized with the controller schedule. The refresh button of the schedule does force a read from controller and the save action does force a write to the controller. Last update wins.

Schedules

Prerequisites

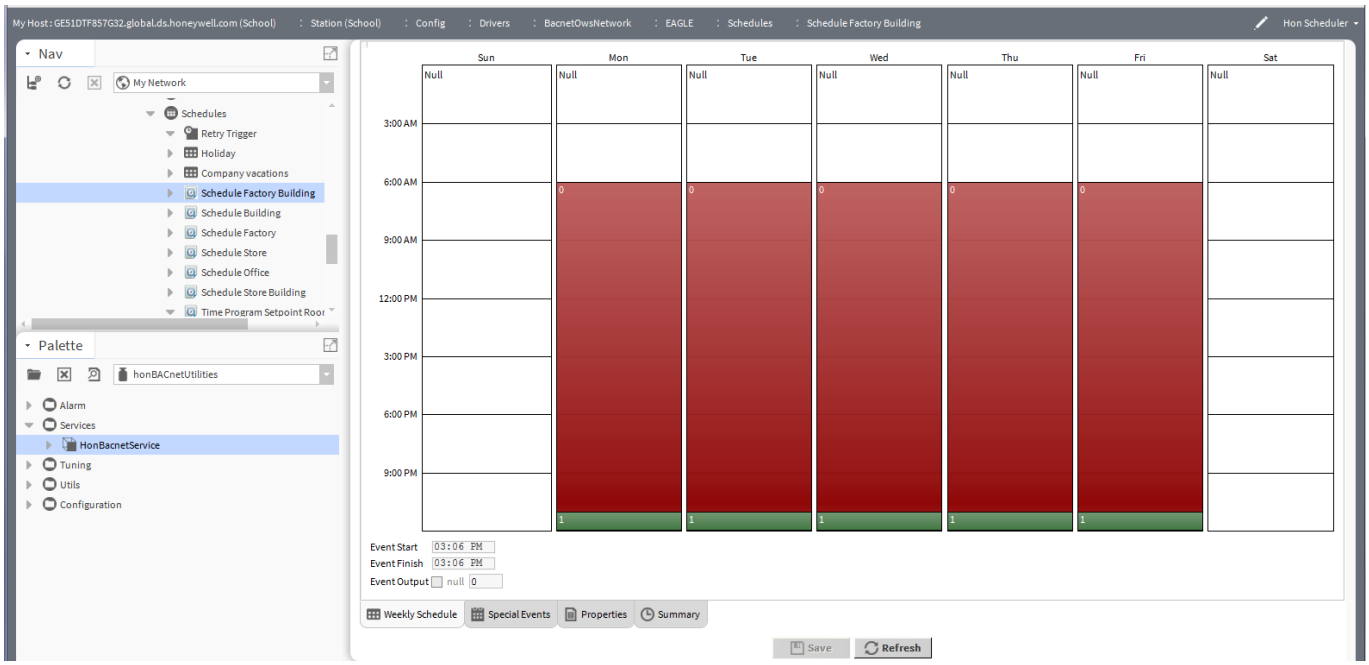
Discover schedules and calendars and add them to the station as described in the general procedure in the "Discover Objects of Controller and Add them to Station" section, or apply the import function as described in the "Import and Add Objects via EDE File Import" section.

Procedure

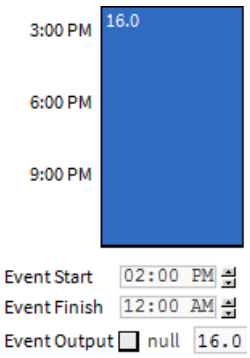
1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the controller.
2. In the controller, expand the *Schedules* folder, and then double-click the schedule.

   RESULT: On the right pane, by default the weekly schedule (Sun to Sat) is displayed graphically. The vertical time scale on the left shows the range of 12.00 AM to 12.00 AM.

   NOTE: The sequence and the start day can be changed in the lexicons.



A schedule (when selected turns from green into blue color) is defined as event (block) starting with a switchpoint (event start) and ending with a switchpoint (event finish). The value of a switchpoint is called Event Output. The engineering units are not displayed und must be enabled separately as described in the "Set Schedule Properties" section. A switchpoint can be changed in the fields **Event Start, Event Finish,** and **Event Output** or graphically by moving the event start limiter and/or the finish limiter.



At the bottom of the pane, you will find further tabs with the following functions:

On the *Special Events* tab, you can define exceptions for every schedule (week program).
Exceptions have higher priority than the week program and will overwrite the week program for a definable time period. Exceptions can be one of the following four time periods:

- Specific Date
  e.g. Christmas Eve or 5.5., the whole of May, or the whole year of 2004
- Date Range
  e.g. Summer holidays from 29.7-7.9.2004
- Recurring Event
  e.g. every last Friday of every month
- Calendar Reference
  A project-wide calendar provides dates, e.g. regional holidays and public/religious festivals or any other particular date. The time period can be a specific date, a date range or a recurring event.

The *Properties* tab shows miscellaneous general settings of the schedule such as default output, facet (engineering unit) etc.

The *Summary* tab shows in an interactive 5-month-based calendar the following switchpoint values in table format:

- timestamp
- output (value)
- source (which day of weekly schedule

3. In the *Discovered* pane, the found datapoints are listed. Select the datapoints you want to add to the station. Multi-selection using the SHIFT of STRG key is possible.

4. Click **Add** button.

Edit Weekly Program

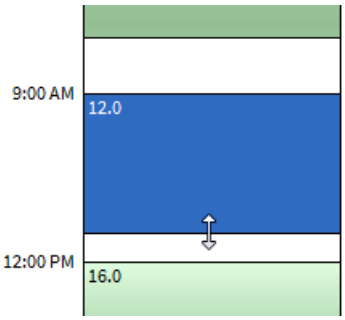
The edition of a weekly program may include the following tasks.

- Create switchpoints
- Change switchpoints, e.g. event start and/or finish time, and or output value
- Copy days
- Clear days
- Clear week
- Delete event
- Set switch block as all day event
- Apply switch block to workdays (Monday through Friday)

Create Switchpoint

Procedure

1. Select the *Weekly* tab at the bottom of the right pane.
2. Create a blank area where you want to create a switchpoint as described in the "Clear day" and "Clear Week" sections.
3. Add new switchpoint(s) graphically as follows:
   a. click with the mouse button at the event start time.
   b. With pressed mouse button move the cursor upwards or downwards to the event finish time.
   c. At the event finish time, release the mouse button.



4. Click **Save** button.

Change Switchpoint

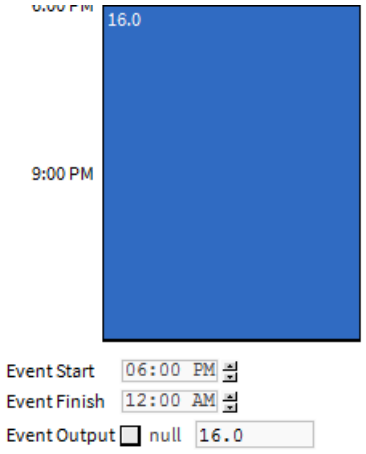
For a switchpoint any of the following can be changed:

- event start and/or finish time
- output value

Procedure

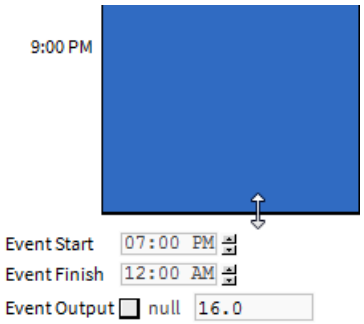
1. Select the *Weekly* tab at the bottom of the right pane.
2. Click into the switch block.

   RESULT: The switch block is highlighted in blue. In the Event Start and Event Finish fields the start and end times are displayed. The Event Output field shows the value.



3. Do any of the following:
   a. to change the event start or event finish time, click the hours and minutes digits respectively in **Event Start** or **Event Finish**, and then adjust the time by clicking the upwards or downwards button.

b. or, in the graphic view, hover over the start or finish time until the hand cursor switches to a 2-arrow cursor. Then click with the mouse button and with pressed mouse button move the cursor upwards or downwards to the desired time. At the desired time, release the mouse button.



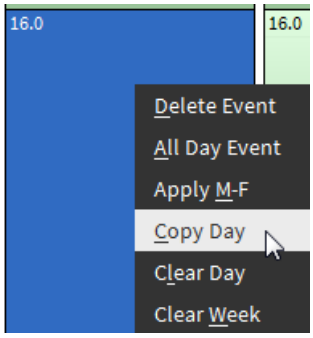
c. To change the output value, click in the **Event Output** field, and enter the value. If desired, click **null** check box. The null value removes the current value entry of the switch point from the priority array. Then the next lower value in the priority array becomes the present value.

4. Click **Save** button.

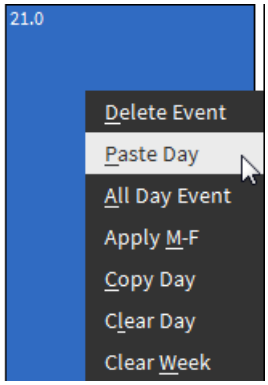
Copy Day

Procedure

1. Select the *Weekly* tab at the bottom of the right pane.
2. Right-click into a switch block of the source day you want to copy.
3. In the context menu, click **Copy Day**.



4. Right-click into a switch block of the target day.



4. In the context menu, click **Paste Day**.

   RESULT: The day with all switch blocks is copied to the target day.

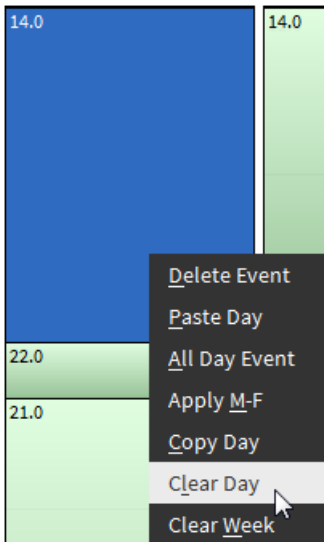
5. Click **Save** button.

Clear Day

Procedure

1. Select the *Weekly* tab at the bottom of the right pane.

2. Right-click into a switch block of the day you want to clear.



3. In the context menu, click **Clear Day**.

   RESULT: All switch blocks are removed and the default output value defined on the *Properties* tab is assigned to the day.

4. If desired, add new switch blocks graphically as follows:

   a. click with the mouse button at the event start time.
   b. With pressed mouse button move the cursor upwards or downwards to the event finish time.
   c. At the event finish time, release the mouse button.

5. Click **Save** button.

Clear Week

This function is performed in the same way as clearing a day. Please refer to the "Clear Day" section. Instead, use the **Clear Week** command in the context menu.

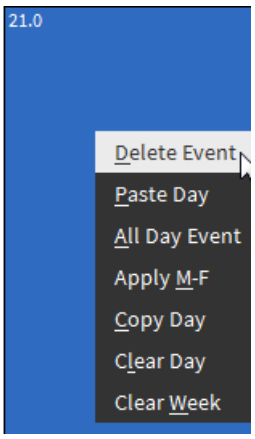
RESULT: All switch blocks are removed and the default output value defined on the *Properties* tab is assigned to the each day of the week.

Delete Event

Procedure

1. Select the *Weekly* tab at the bottom of the right pane.

2. Right-click the switch block you want to delete.



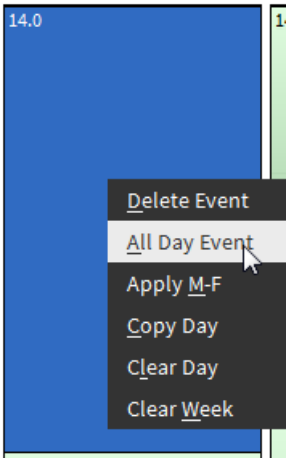
3. In the context menu, click **Delete Event**.

   RESULT: The switch block is deleted. The default output value is set for the empty switch block.

Set Switch Block as All Day Event

Procedure

1. Select the *Weekly* tab at the bottom of the right pane.
2. Right-click the switch block.



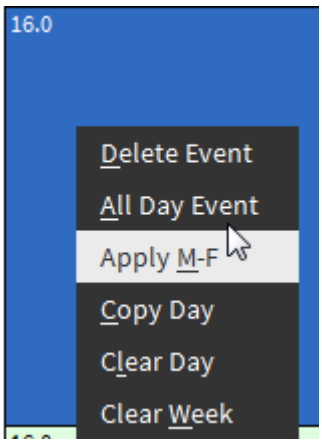
3. In the context menu, click **All Day Event**.

   RESULT: All existing switch blocks are merged into one switch block. The default output value is set for the complete switch block.

Apply Switch Block to Workdays (Monday through Friday)

Procedure

1. Select the *Weekly* tab at the bottom of the right pane.
2. Right-click the switch block.



3. In the context menu, click **Apply M-F**.

   RESULT: The selected switch block will be applied to all workdays of the week.

Create Special Events

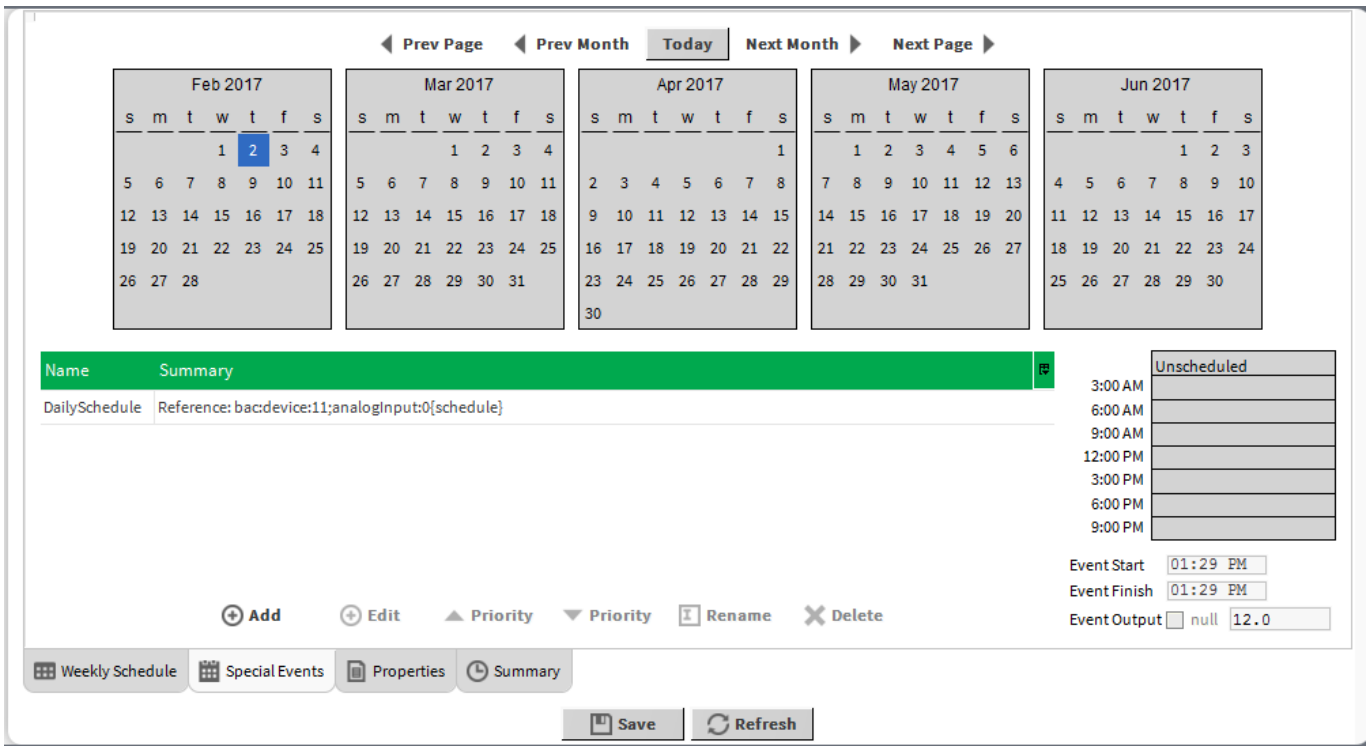
On the *Special Events* tab, you can define exceptions for every schedule (week program). Exceptions have higher priority than the week program and will overwrite the week program for a definable time period. Exceptions can be one of the following four time periods:

- Specific Date
  e.g. Christmas Eve or 5.5., the whole of May, or the whole year of 2004
- Date Range
  e.g. Summer holidays from 29.7-7.9.2004
- Recurring Event
  e.g. every last Friday of every month
- Custom
  allows any kind of combination
- Calendar Reference
  A project-wide calendar provides dates, e.g. regional holidays and public/religious festivals or any other particular date. The time period can be a specific date, a date range or a recurring event.

Procedure

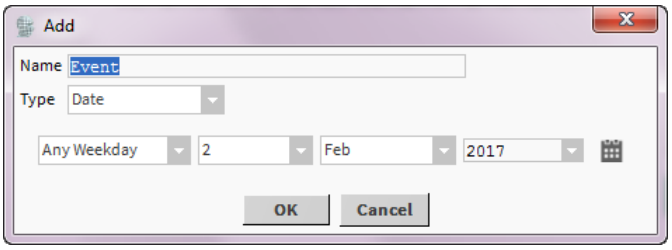
1. Select the *Special Events* tab at the bottom of the right pane.

   RESULT: On the top, a calendar starting with the current month and the following 5 months is displayed.



2. Click the **Add** command .

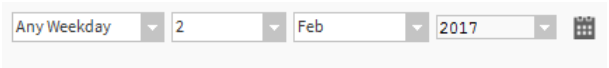
   RESULT: The *Add* dialog box displays.



3. In the **Name** field, enter a name for the special event.
4. From the **Type** drop-down list box, select the type under:

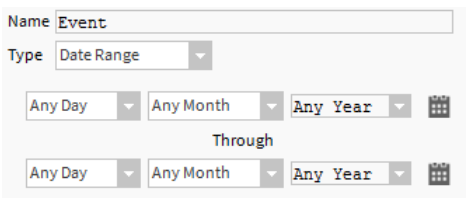
   - Date
     e.g. Christmas Eve or 5.5., the whole of May, or the whole year of 2014

   a. In the fields below, set the day by selecting the weekday, date, month and year.

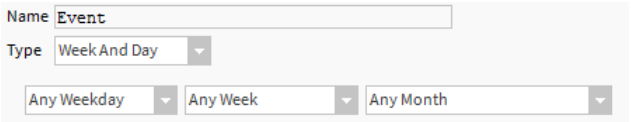


   - Date Range
     e.g. Summer holidays from 29.7-7.9.2014

   b. In the fields below, set data range by selecting the weekday, month and year.

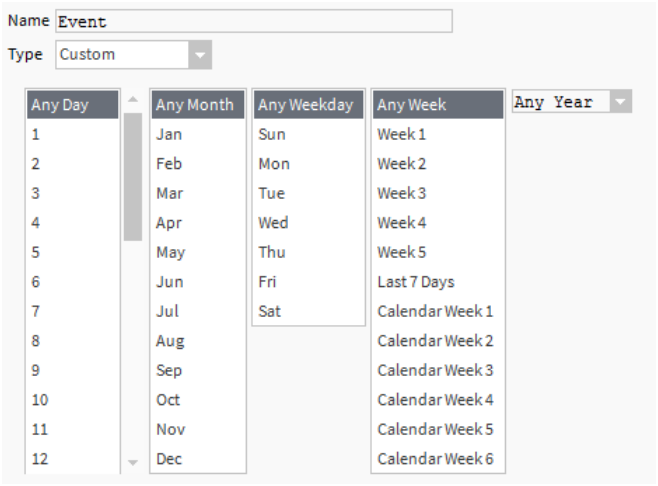


- Recurring Event
  e.g. every Friday of every week, of every month



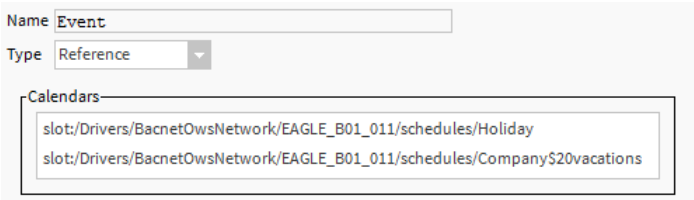
c. In the fields below, set dates by selecting the weekday, week, and month.

- Custom
  allows any kind of combination



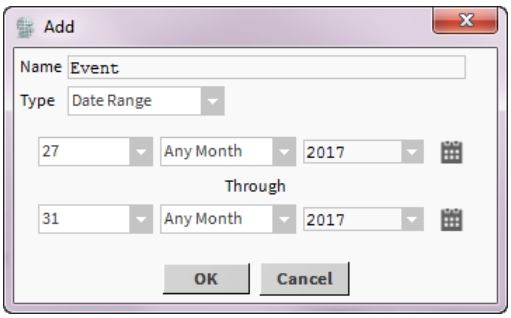
d. In the fields below, set dates by selecting the corresponding options.

- Calendar Reference
  A project-wide calendar provides dates, e.g. regional holidays and public/religious festivals or any other particular date. The time period can be a specific date, a date range or a recurring event.



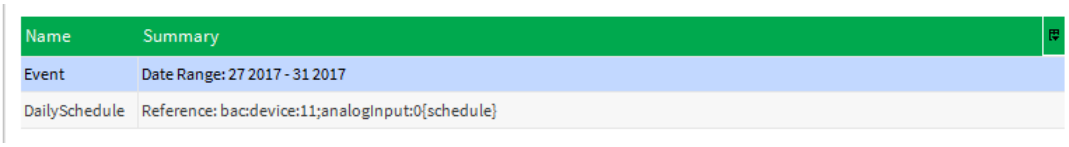
e. In the list, select the calendar.

In the following, a special event of type "date range" is created as an example.

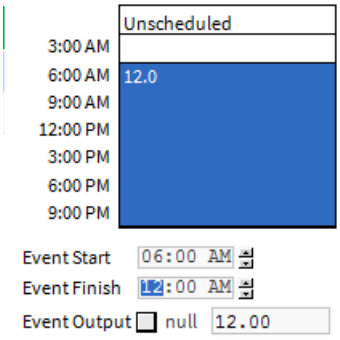


5. Click **OK**.

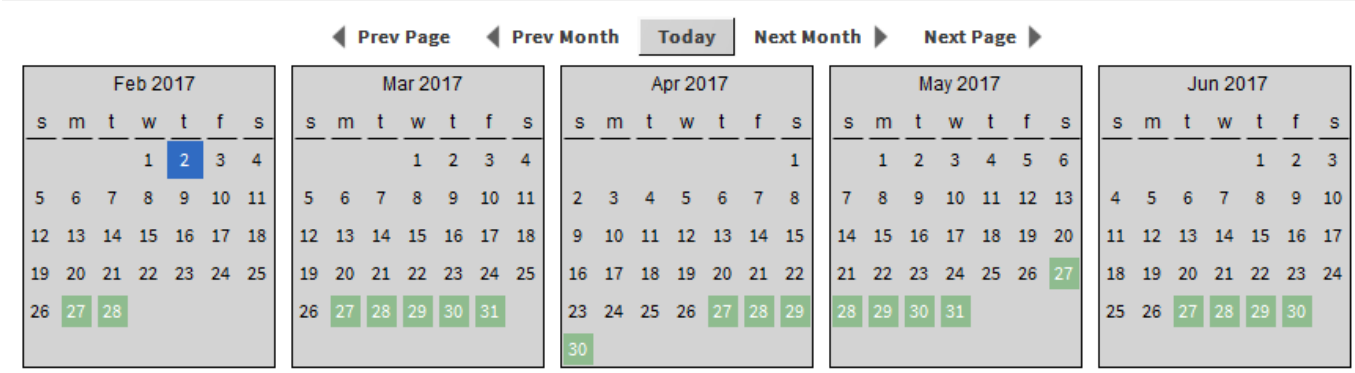
RESULT: The special event is added to the list.



6. On the right, add switch points for the special event as described in the "Create Switchpoint" section.



RESULT: The special event is indicated in green in the calendar.



7. Click the **Save** button
.

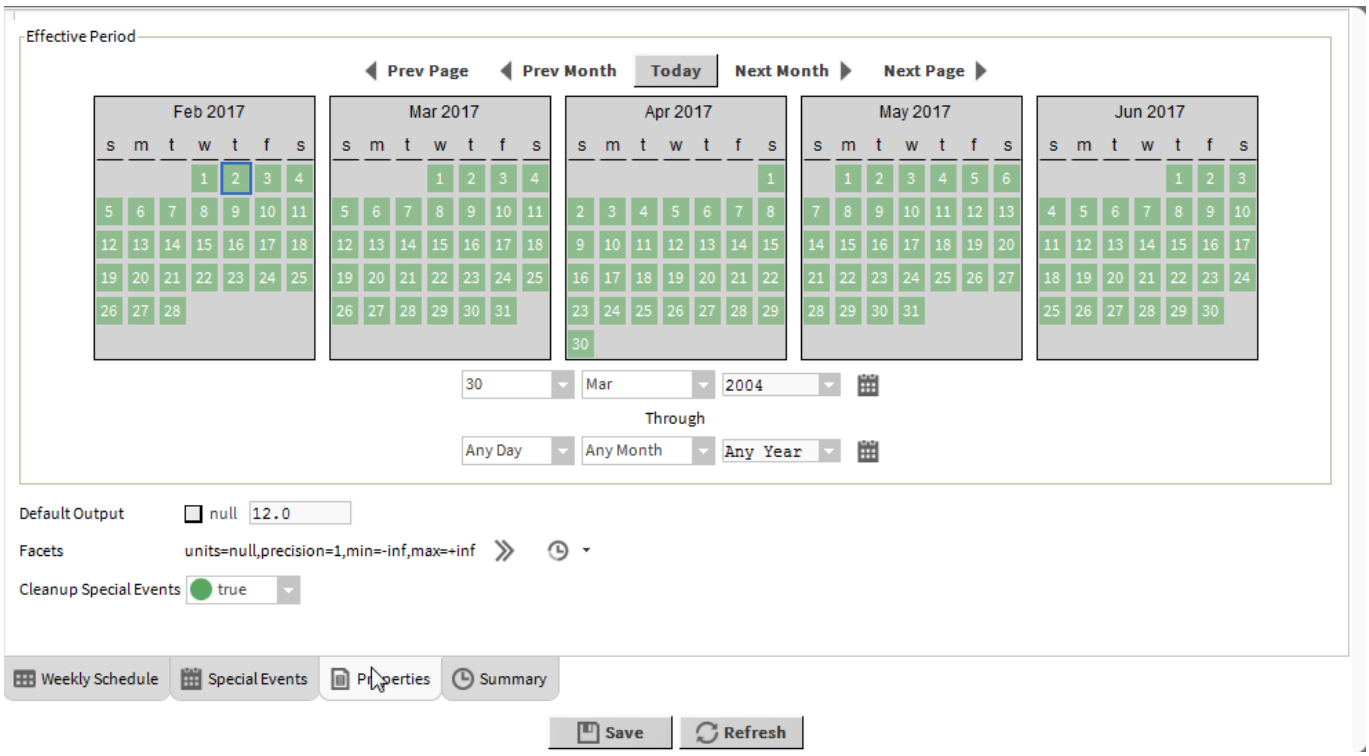
Set Schedule Properties

The *Properties* tab allows editing of miscellaneous general settings of the schedule such as default output, facet (engineering unit) etc.

Procedure

1. Select the *Properties* tab at the bottom of the right pane.

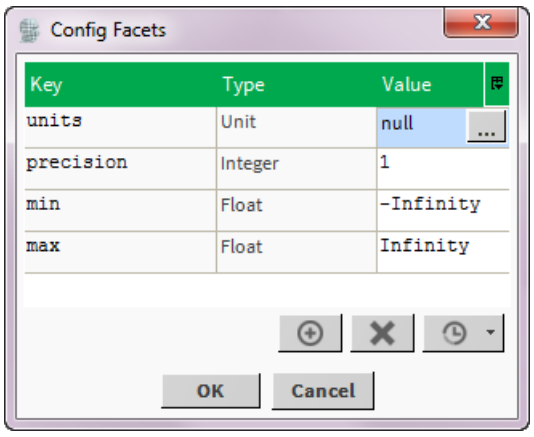
RESULT: On the top, a calendar starting with the current month and the following 5 months is displayed.



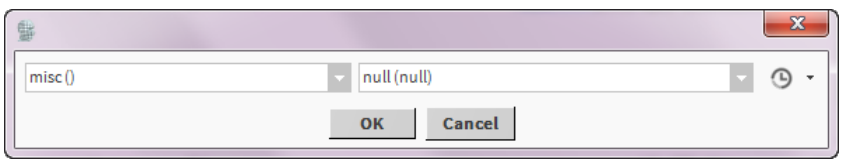
2. To change the default output value, enter the value in the *Default Output* field and click **Save** button.

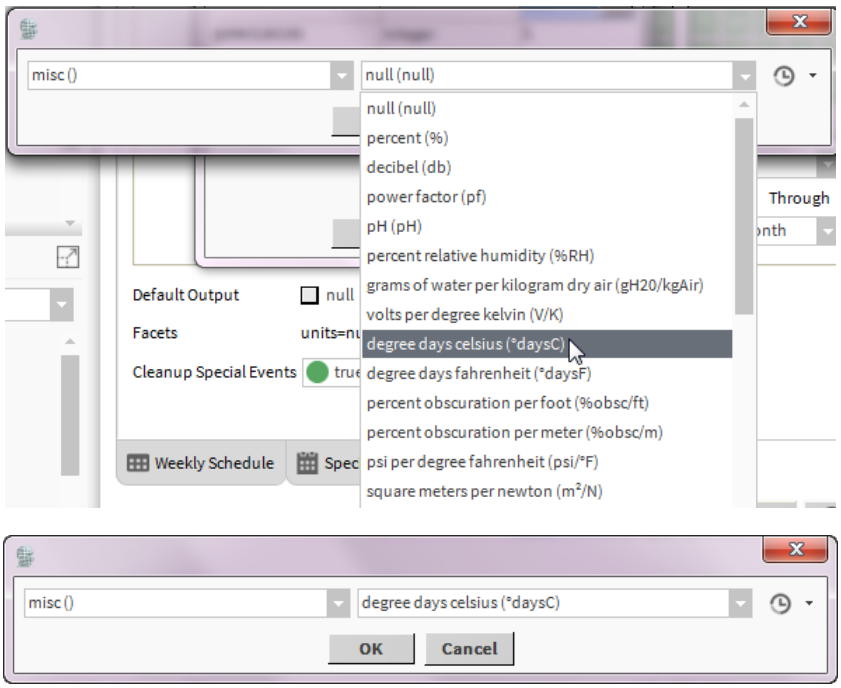
3. To enable the display of the engineering units in the schedule, do the following:

   a. click the arrow at the clock icon .
   b. click desired units in the pop-up window.
   c. click arrow .
   d. In the *Config Facets* dialog box, click browse button in the units row.



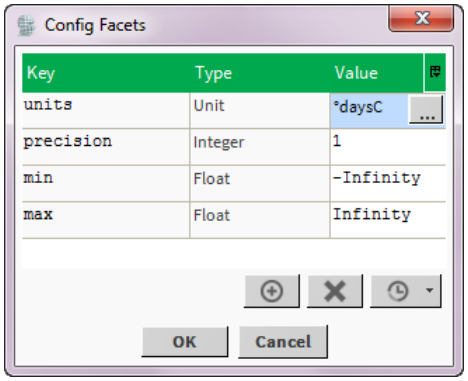
   e. Select engineering unit in the right drop-down listbox.





f. Click **OK**.

RESULT: The facet is changed.



4. To clean up special events, select `True` from the **Cleanup Special Events** drop-down listbox. This removes a special event after it has expired.

View Schedule Summary

The *Properties* tab shows miscellaneous general settings of the schedule such as default output, facet (engineering unit) etc.

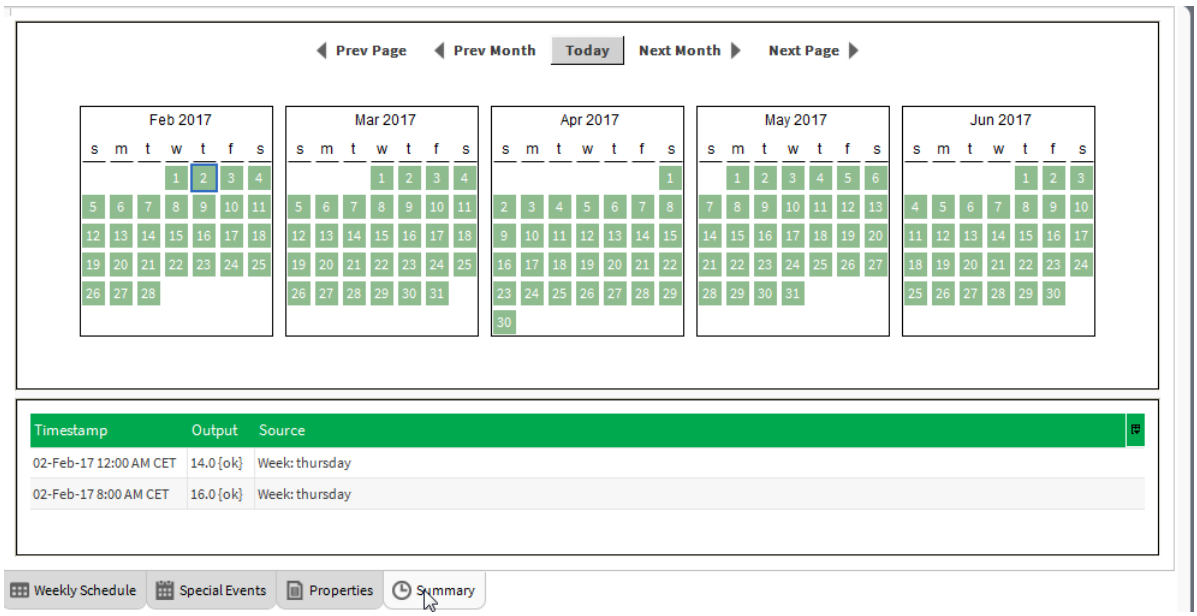
The *Summary* tab shows in an interactive 5-month-based calendar the following switchpoint values in table format:

- timestamp
- output (value)
- source (which day of weekly schedule

Procedure

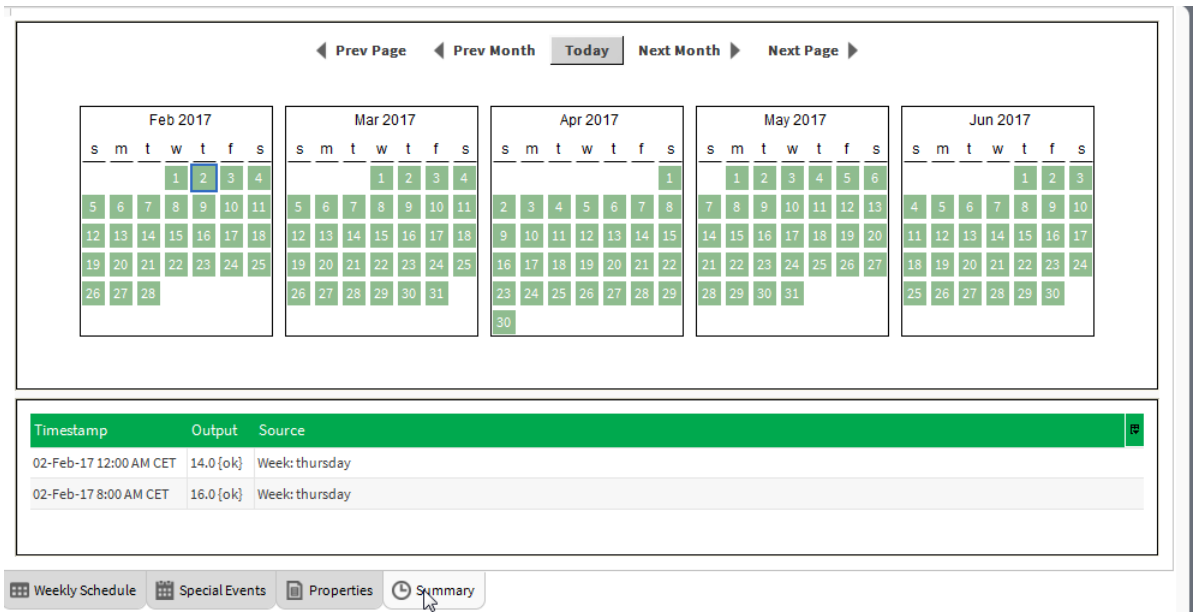
1. Select the *Summary* tab at the bottom of the right pane.

RESULT: On the top, a calendar starting with the current month and the following 5 months is displayed.



Calendar References

Schedules can be referenced to calendars in CARE. When deleting a calendar in *ARENA NX / COACH NX,* the deleted calendar will be uploaded from the controller the next time you click on the corresponding referenced schedule in *ARENA NX / COACH NX.*



1. To view the switchpoint values of a day, click the date in the calendar.

   RESULT: In the area below, the following values are displayed in the table columns.

   - timestamp
   - output (value)
   - source (which day of weekly schedule

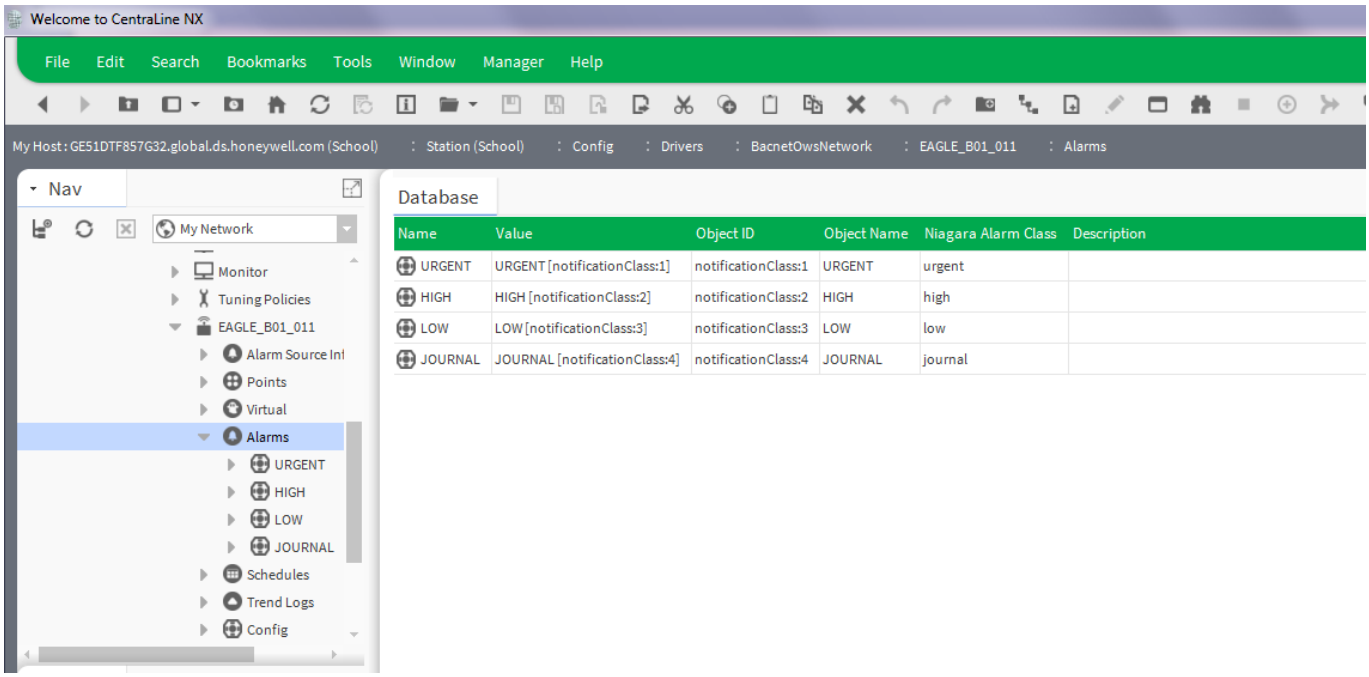
ALARMS

Prerequisites

For getting and viewing alarms, the following steps must be performed:

1. The BACnet notification classes must be imported by the EDE file process or manually via discovery. Once imported, they are located in the *Alarms* folder of the controller.
2. The Niagara alarm classes must be manually connected to the alarm console recipient.
3. The Niagara Alarm classes must be manually assigned to the imported BACnet notification classes.
4. Alarm extensions must be assigned to datapoints of which alarms should be shown

NOTE: ARENA NX / COACH NX will be automatically defined as alarm console recipient for the controller.



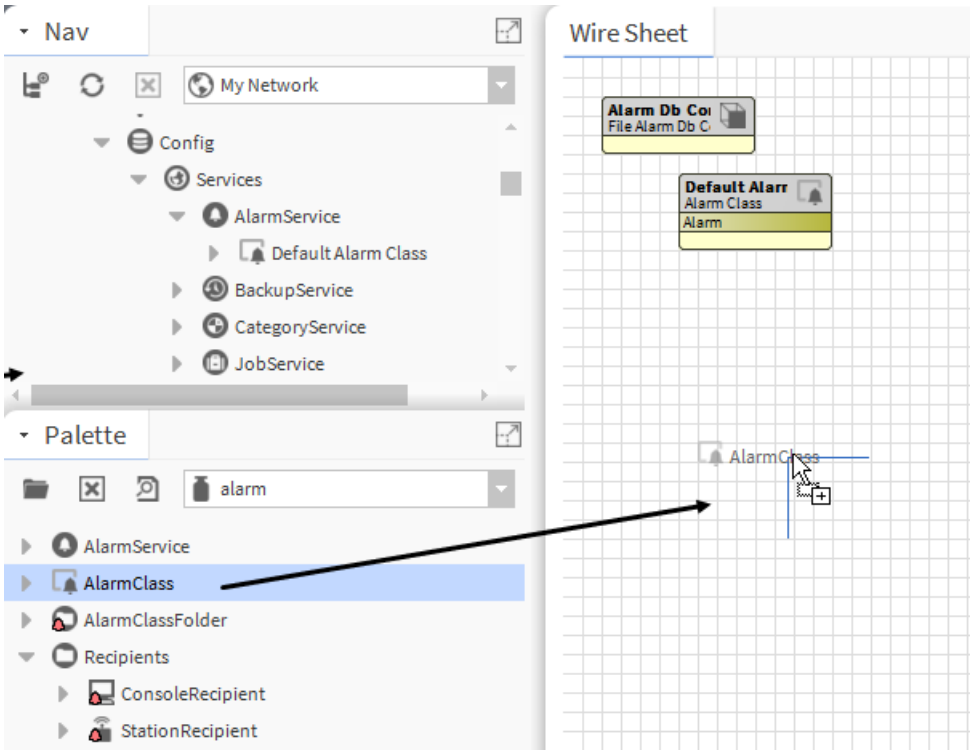
Import / Discover BACnet Notification Classes

Please refer to the "Discover Objects of Controller and Add them to Station" and "Add Objects to Station via EDE File Import " sections.

Connect Niagara Alarm Classes to Alarm Console Recipient

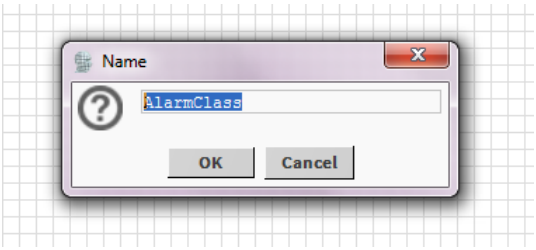
Procedure

1. In the *Nav side bar* on the left, expand the *Station* folder and browse to the *AlarmService* folder.
2. Right-click the *AlarmService* folder, click **Views**, and then click **Wire Sheet** in the context menu.

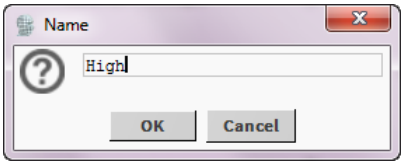


3. In the *Palette* tab at the bottom, select **alarm** from the drop-down listbox, and then drag&drop **AlarmClass** to the wiresheet.

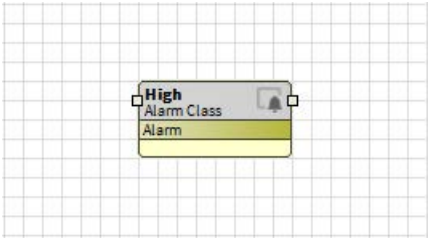
   RESULT: The *Name* dialog box is displayed.



4. Change the name of the alarm class, e.g. ´High`.

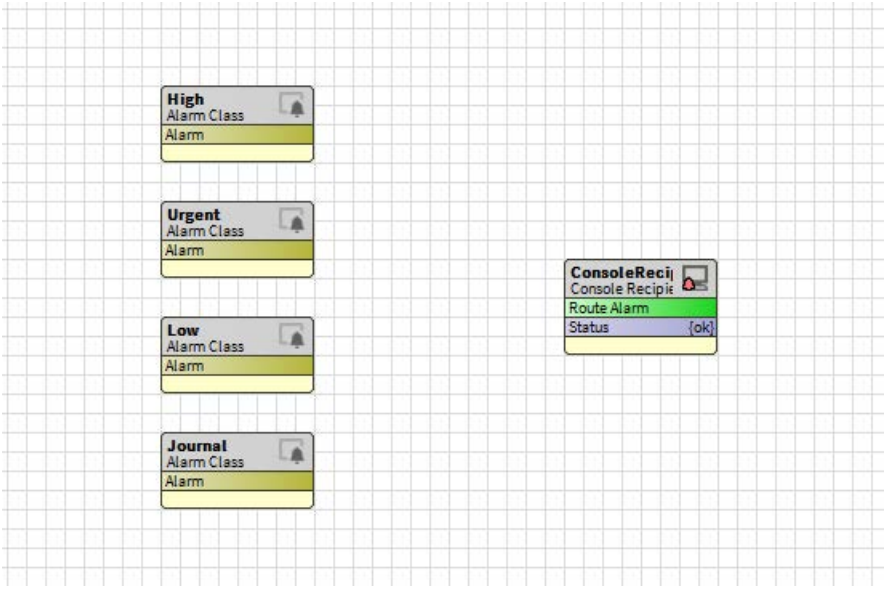


   RESULT: The alarm class is added to the wiresheet.

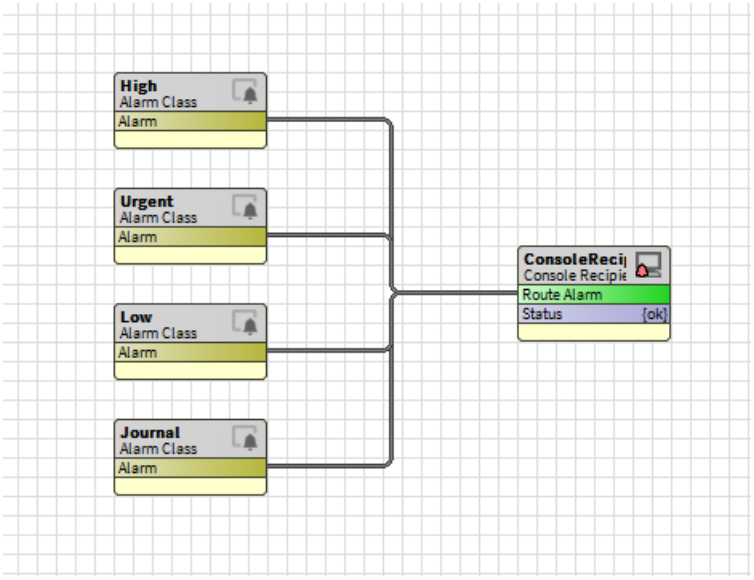


5. Add all required alarm classes to the wiresheet in the same way.

6. From the *Palette* tab, drag&drop the console recipient to the wiresheet.



7. To link an alarm class to the alarm recipient, click on the yellow-green **Alarm** bar of the alarm class icon, and with mouse button pressed draw a line to the console recipient´s green **Route Alarm** bar. When the cursor turns to arrow shape, release the mouse button.



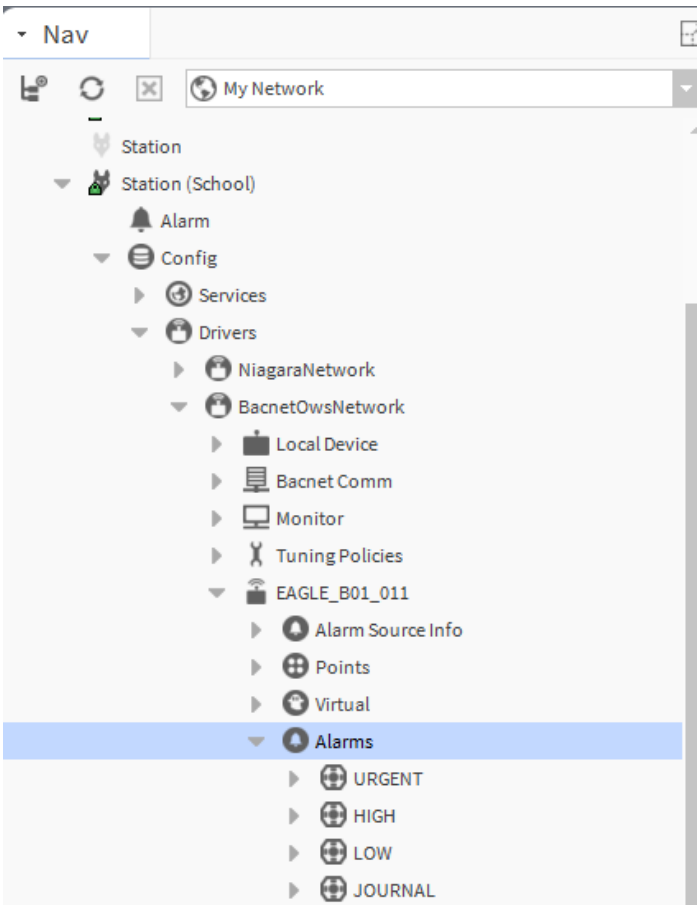
8. Repeat step 7 for connecting the remaining alarm classes.

Assign Niagara Alarm Classes to BACnet Notification Classes

Procedure

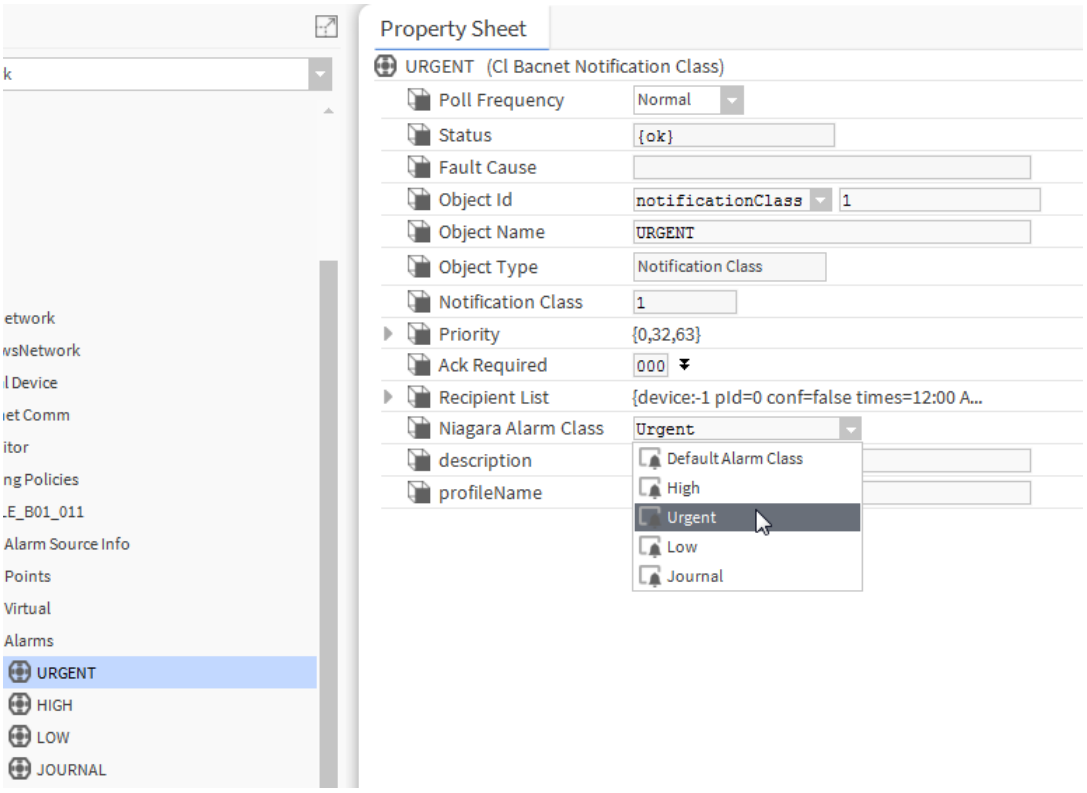
1. In the *Nav* side bar on the left, expand the *Station* folder and browse to the *Alarms* folder.
2. Open the *Alarms* folder.

   RESULT: In the *Nav* side bar, the BACnet notification classes are displayed.



3. Double-click the notification class.

4. On the *Property Sheet* on the right, assign the corresponding Niagara alarm class from the **Niagara Alarm Class** drop-down listbox.



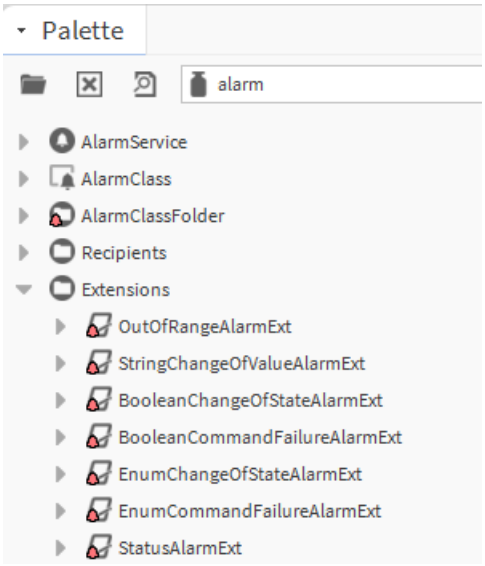
5. Click the **Save** button at the bottom.
6. Repeat steps 4 and 5 for all notification class - alarm class assignments.

Assign Alarm Extension to Datapoint

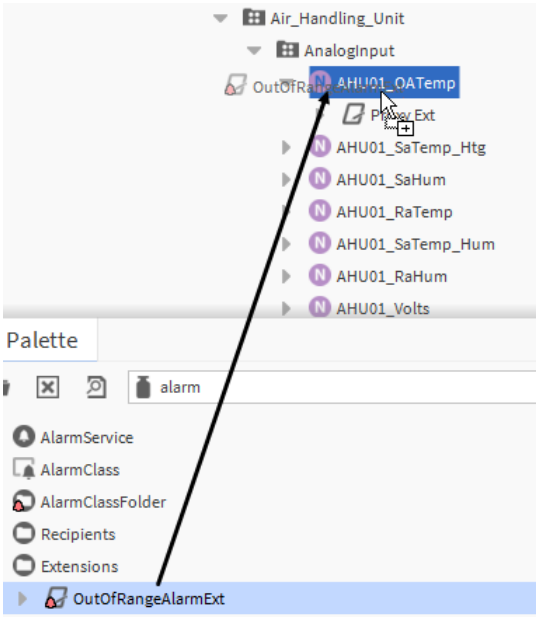
Purpose This alarming function can be used if alarms are not generated by the controller by default. Using this function, alarming will then be handled by the ARENA NX supervisor.

Procedure

1. In the *Palette* tab, expand the *Extensions* folder.

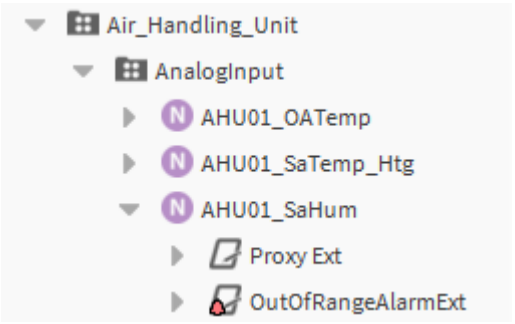


2. Drag&drop the desired alarm extension to the datapoint in the *Points* folder.

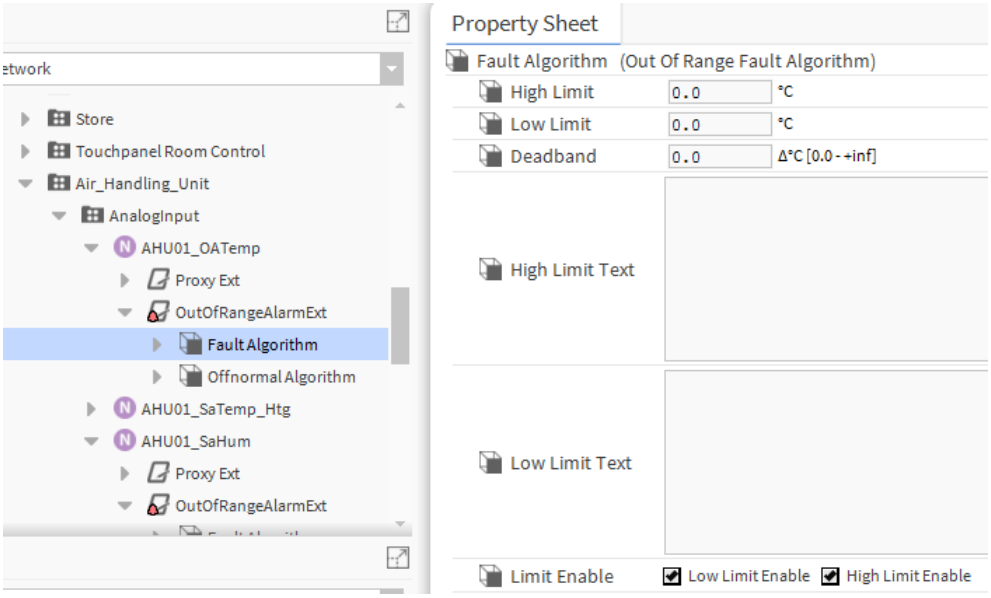


3. Change the name of the extension in the Name dialog box if desired, and then click the OK button.

RESULT: The alarm extension is assigned to the datapoint.



4. Open the alarm extension and define the settings for the Fault and Offnormal algorithms according to the configured datapoint settings. E.g. if ´Low Limit Enable` or ´High Limit Enable` is configured in the datapoint properties, these options must also configured in the assigned extension.

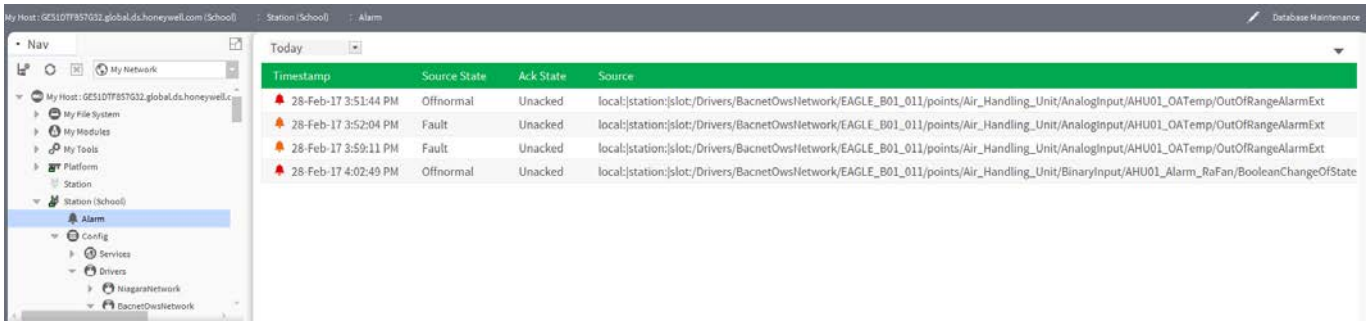


View Alarms

Procedure

1. To view alarms, double-click the *Alarm* folder in the *Nav* side bar.

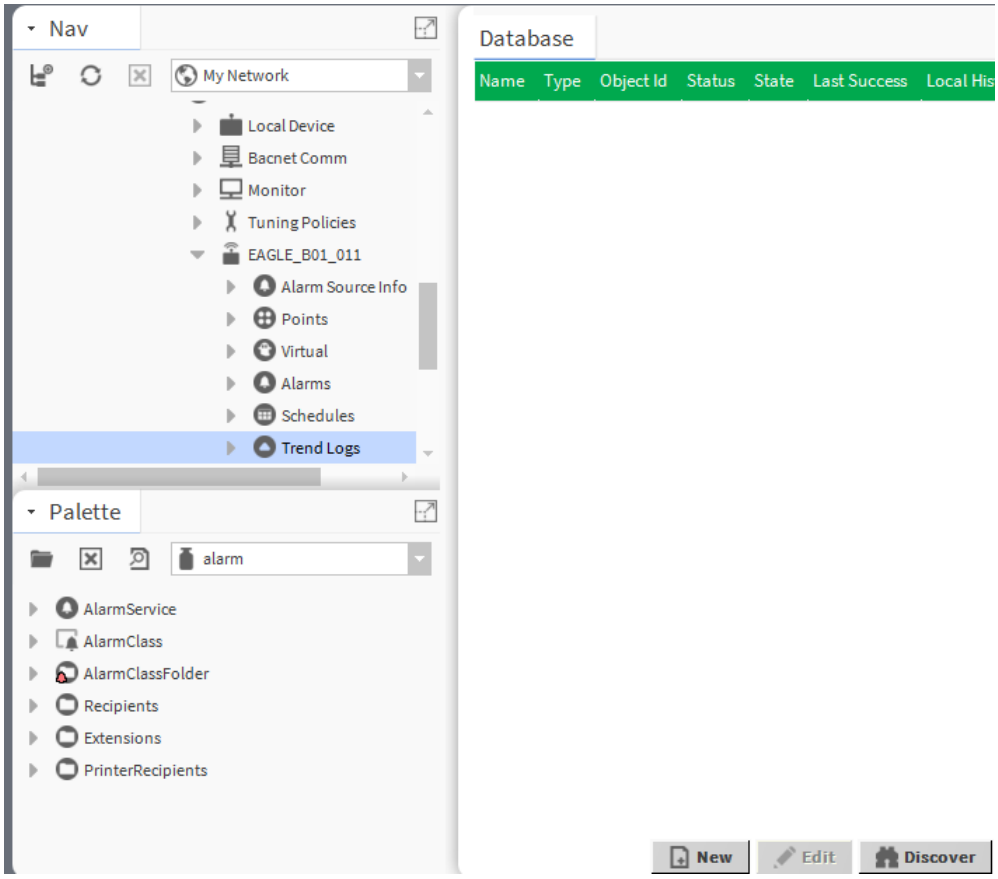
RESULT: The current alarms are displayed on the right pane.



NOTE: In ARENA NX / COACH NX when using an OWS profile, you cannot create trend objects, but only view already existing trends. When using an AWS profile these tasks are possible.

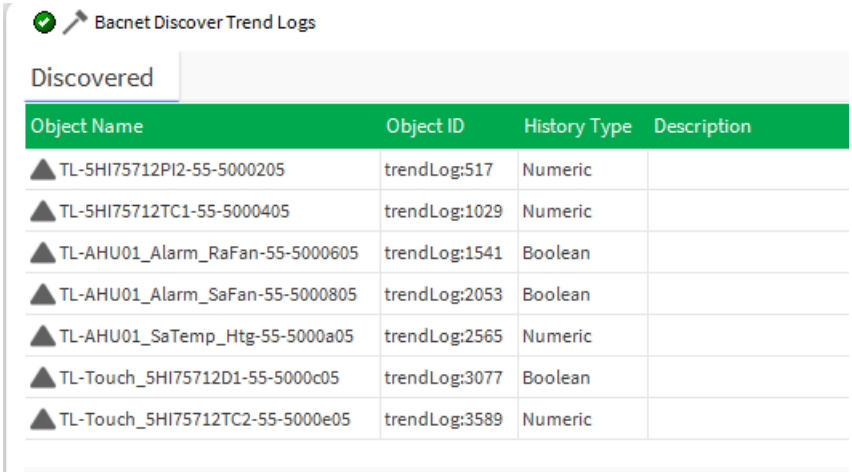
1. In the *Nav side bar*, expand the station and navigate to the controller in the *History* folder.

2. Open the controller, and click on the *Trend Logs* folder.



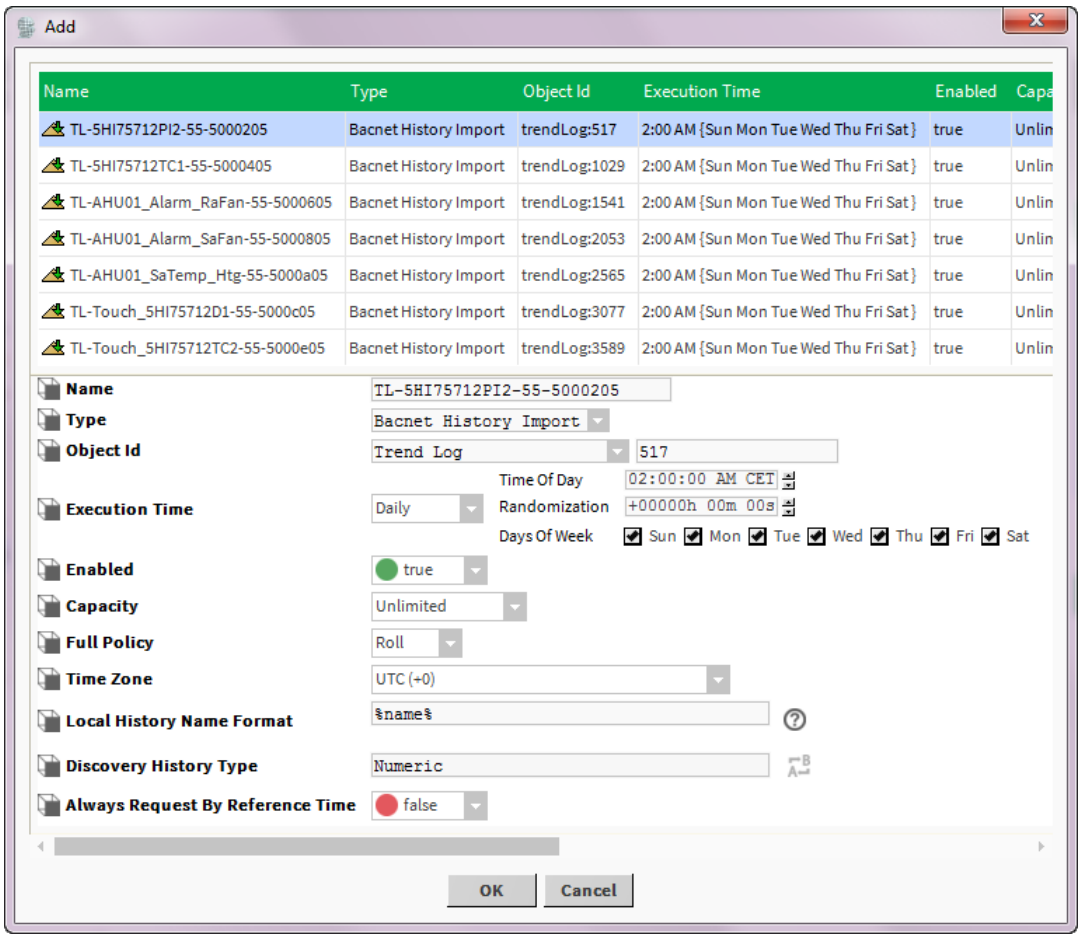
3. On the right, click the **Discover** button.

   RESULT: The discovered trended datapoints are displayed on the *Discovered* pane.



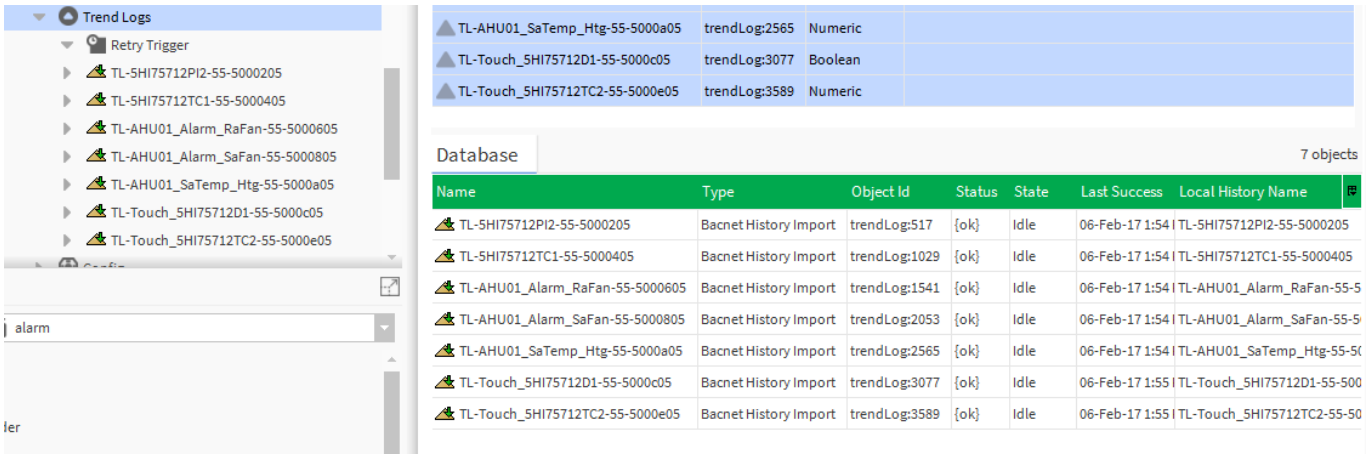
4. Select the trend objects, you want to add to the database, and then click the **Add** button at the bottom.

RESULT: The *Add* dialog box displays.



5. Click the **OK** button at the bottom.

RESULT: The trend objects are added to the database as indicated by the display on the *Database* pane and in the *Trend Logs* folder in the Nav side bar.



4. To view the graphical trend data of datapoint, double-click the item in the tree.

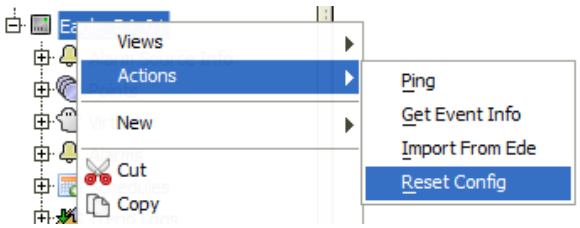
RESULT: On the right pane, the trend data of the datapoint is shown.

RESET CONTROLLER CONFIGURATION

If supported, the Reset Config feature deletes the following items in the controller:

- datapoints,
- folder structures
- calendars and schedules
- notification classes
- alarm classes
  (applies only to alarm classes not used by other controllers)

1. In the *Nav side bar*, right-click the controller, click **Actions**, and then click **Reset Config**.



IRM CONTROLLER PARAMETERS

Parameters of IRM controllers can be accessed by using an Eagle controller as MSTP gateway. The parameters will be loaded via a parameter set, which is a.*CSV* file provided with the CentraLine NX installation by default.

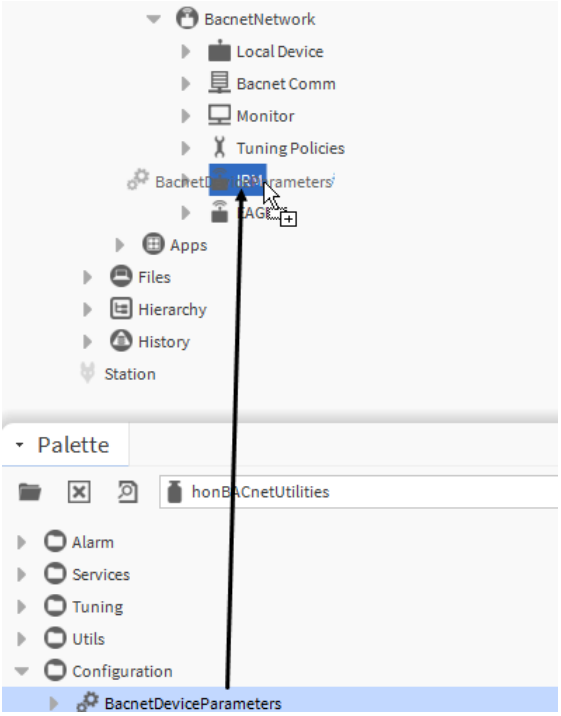
Load Parameters

Prerequisite Steps

1. Connect the IRM controller to the EAGLE controller via their MSTP interface. Please refer to the corresponding product data and mounting instructions.
2. In CARE, create the EAGLE controller and configure it as MSTP gateway.
3. Create a "dummy" plant including e.g. 1 analog value datapoint.
4. Download the application and the controller settings into the EAGLE controller (see CARE User Guide EN2Z-0937GE51).
5. Configure the IRM controller by using the RoomUp App (see IRM Application Guide EN2Z-1015GE51.

Procedure

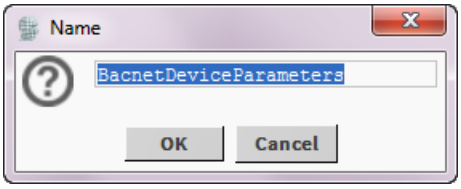
1. In COACH NX / ARENA NX, discover the EAGLE and IRM controllers.



2. In the *Palette* tab at the bottom, select **honBACnetUtilities** from the drop-down listbox, then open *Configuration*, and then drag&drop the parameters item, in this case, **BACnetDeviceParameters** to the IRM controller.

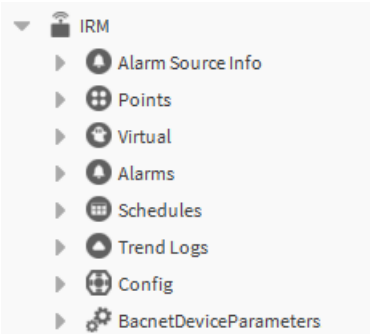
   NOTE: Multiple parameter items can be added to the IRM controller.

   RESULT: The *Name* dialog box is displayed.



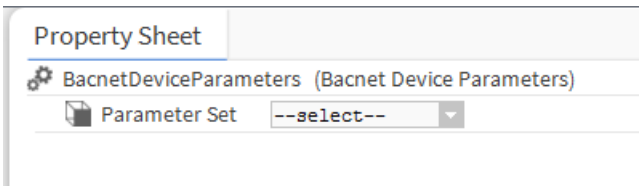
3. Change the name if desired, and then click **OK**.

   RESULT: The parameters item is added to the controller as indicated in the tree.

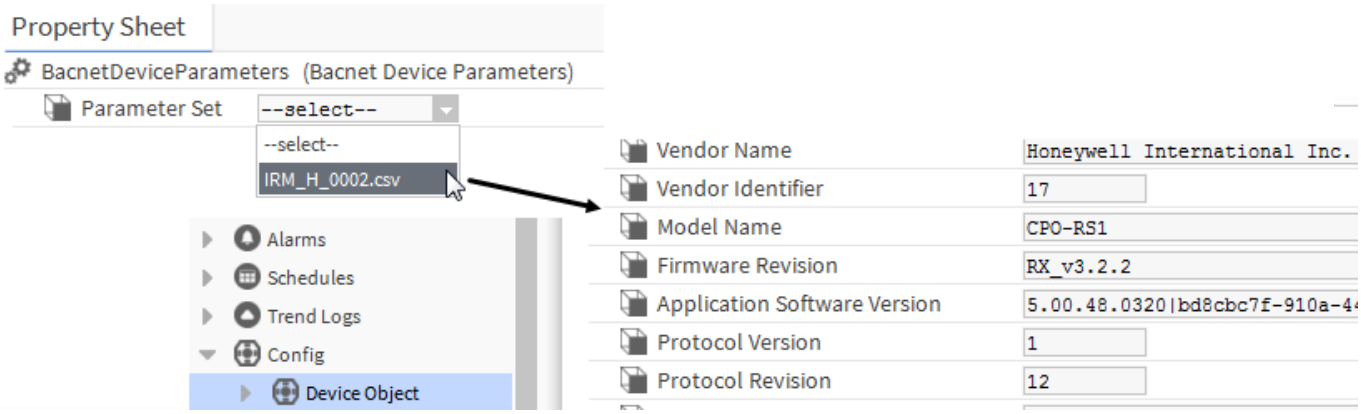


4. Double-click on the parameters item.

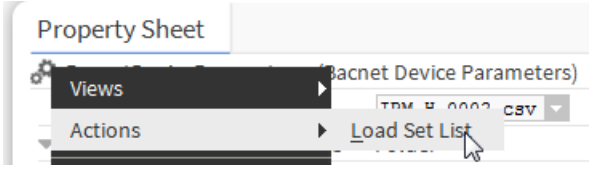
   RESULT: On the Property Sheet on the right, the CSV file can be selected from the **Parameter Set** drop-down listbox.



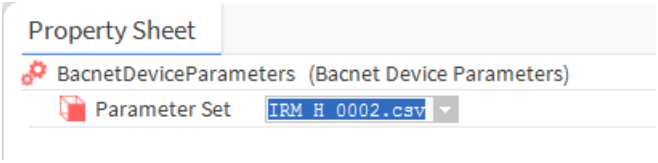
NOTE: Parameter sets are listed according to the Vendor ID and the Model Name of the BACnet device. One parameter set can fit to multiple model names. Only matching parameter sets will be selectable. If no matching parameter set is found, a message is displayed.



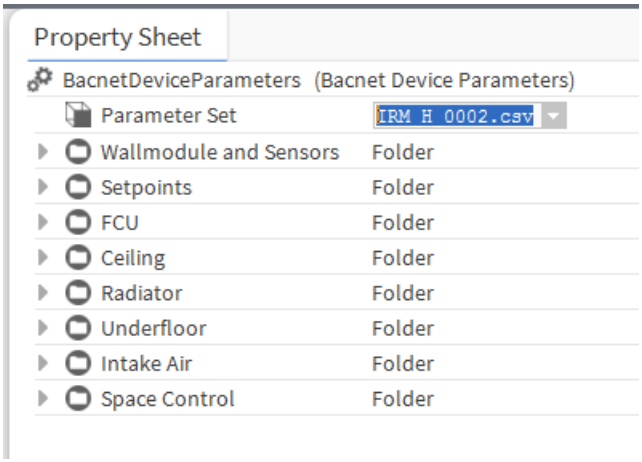
The action **Load Set List** will refresh the list of available parameter sets.



5. Select the *CSV* file, in this case, IRM H_0002.csv.



RESULT: The parameters are displayed according to the IRM RoomUp structure. The parameters can be further grouped in subfolders



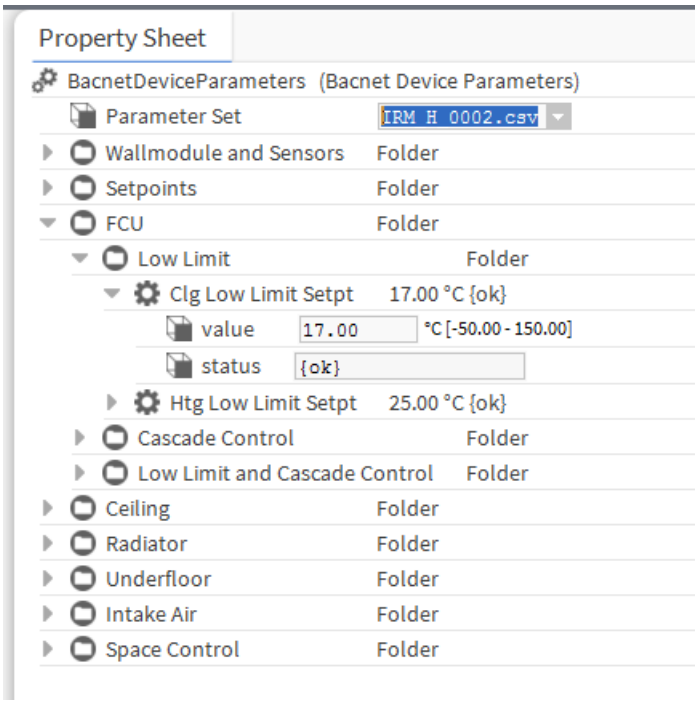
Change Parameters

The parameters have value and status, and they are only polled when visible. Values can be changed directly in the field or by using the **Set** action. Based on the Facet setting = default, the default value can be written using the **Set Default** action.

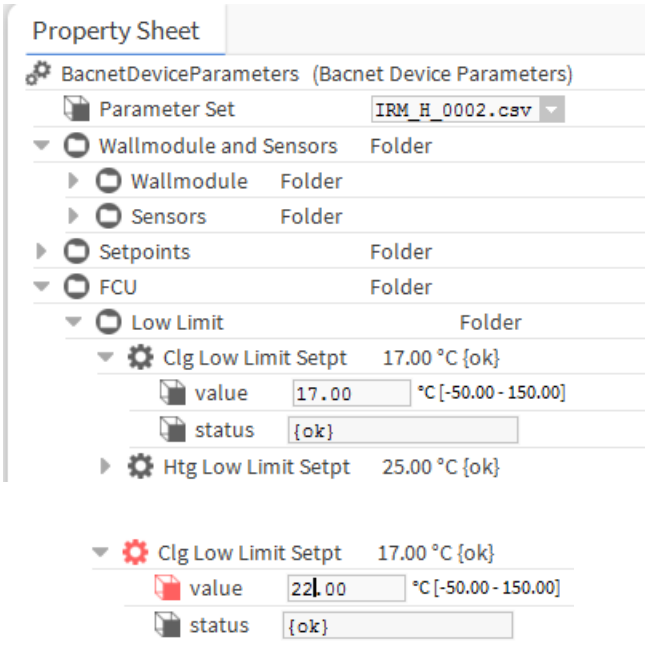
The status changes when read or write faults occur.

Procedure

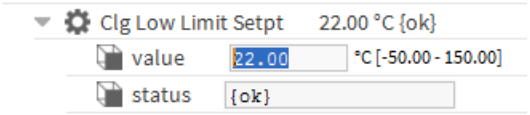
1. To edit parameters, expand the corresponding tree item.



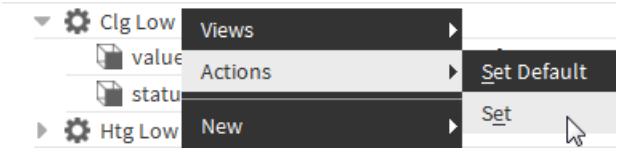
2. Change the value directly in the field, and then click the **Save** button at the bottom.



RESULT: The value is updated.

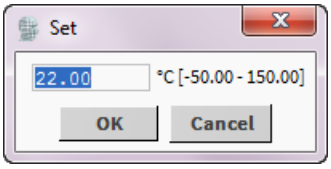


3. Alternatively, you can change parameters by using the **Set** action.

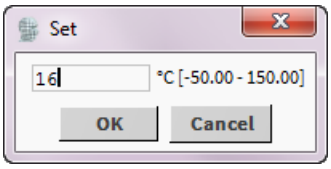


4. To do so, right-click on the parameter setting which is indicated by the icon , select **Actions**, and then click **Set** in the context menu.

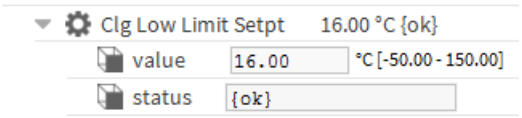
   RESULT: The *Set* dialog box is displayed.



5. Change the value, and then click **OK**.



   RESULT: The value is updated.



Binding of Parameters

Parameters can be bound using standard Niagara Widget functions such as:

- Label binding
- PX file usage
- Palette items bindings (animated graphics, boolean types, etc.)
- Field editor usage
- Actions binding

Please refer to the basic Niagara documentation for detailed information on these techniques.

WEBSTART BROWSER USAGE

NOTE: When using the ORACLE Webstart browser on a PC or notebook the display of the pages may take a long time since the browser function is based on JAVA applets which are not used in mobile applications.

Further details about WebStart are described in the document docWebStart.pdf which is located in the docs folder of the ARENA NX / COACH NX installation folder.

"HOW TO" INSTRUCTIONS

For the BACnet Utilities driver, the following additional feature is available

- Emergency Actions Always Hidden

The corresponding detailed information is included in "How to" Instructions which can be downloaded from the CentraLine FAQ database at:

https://clfaq.ge51.honeywell.de/

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Manufactured for and on behalf of the Environmental and Energy Solutions Division of Honeywell Technologies Sàrl, Rolle, Z.A. La Pièce 16, Switzerland by its Authorized Representative:

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EN2Z-1020GE51 R0418