

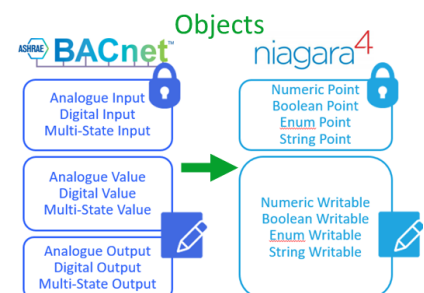
A horizontal timeline illustrating the milestones of the BACnet Standard 16484-5. The timeline is represented by a blue line with vertical connectors leading to six light blue rectangular boxes. Each box contains a year, a logo or text, and a description of the event. The milestones are as follows:

- 1990:** ASHRAE BACnet[®] Project started. (Includes ASHRAE and BACnet logos)
- 1995:** ANSI ASHRAE American National Standards Institute Approved Standard 135-1995. (Includes ANSI and ASHRAE logos)
- 1998:** ASHRAE BACnet[®] INTEREST GROUP EUROPE (BIG-EU) Launches in Frankfurt. (Includes ASHRAE and BACnet logos)
- 1999:** BACnet[®] becomes Korean National Standard. (Includes BACnet logo and Korean flag)
- 2000:** BMA BACnet MANUFACTURERS ASSOCIATION created. (Includes BMA logo and BACnet logo)
- 2003:** ISO Standard 16484-5. (Includes ISO logo)

The BACnet[®] logo is consistently used throughout the timeline, often accompanied by the ASHRAE logo. The BMA logo is introduced in the 2000 milestone.

BTL TESTING & CONSULTING LABORATORY

B-SS	BACnet Smart Sensor
B-SA	BACnet Smart Actuator
B-ASC	BACnet Application Specific Controller
B-AAC	BACnet Advanced Application Controller
B-BC	BACnet Building Controller
B-OWS	BACnet Operator Workstation
B-AWS	BACnet Advanced Workstation

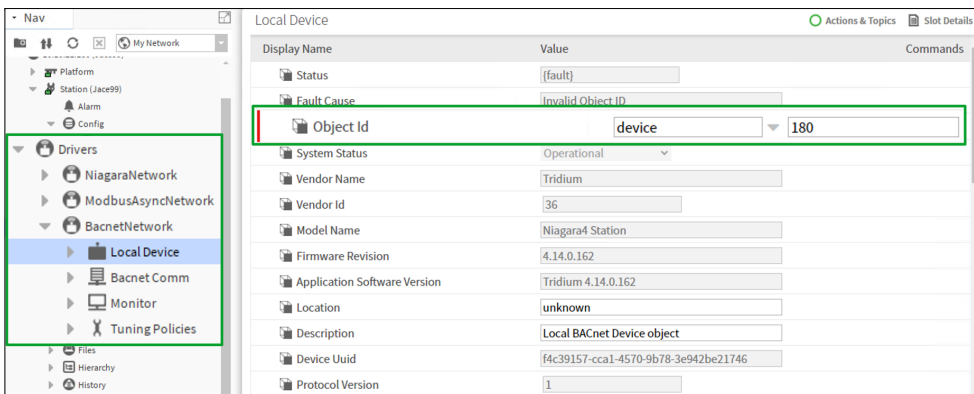
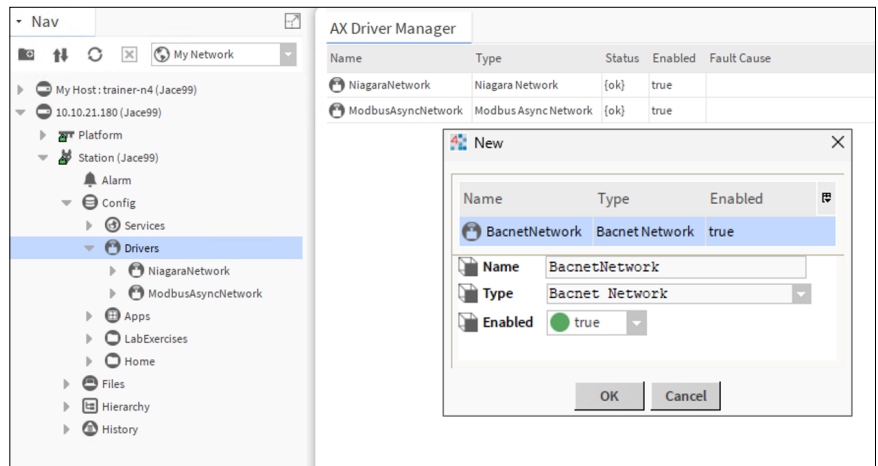


The screenshot displays a Splunk dashboard with two main components:

- Line Chart:** Titled "Reception_ReceptionTemp", it shows a temperature trend over time. The y-axis ranges from 10 to 30. The chart shows a significant spike in temperature, reaching approximately 28, followed by a sharp drop and then a gradual decline.
- Table:** A table titled "Reception_ReceptionTemp" showing system events. The columns are "Time", "Type", "Status", "Value", "Unit", and "Unit". The table contains three rows of data, all with a "Status" of "Failed".

Adding the Bacnet Network

The Bacnet driver is added in the **Driver Manager** under **Station-Config-Drivers** and will require some configuration before it can be used.

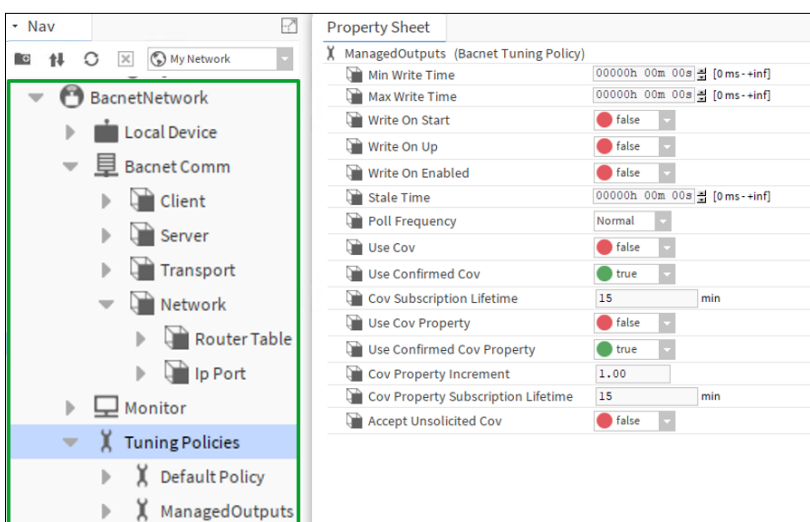
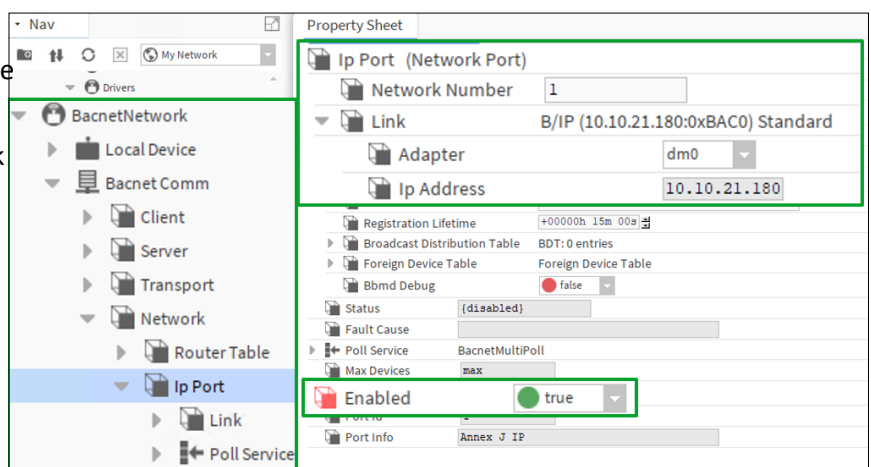


The LocalDevice must be addressed with its **Bacnet Instance** (Object ID) to give the Jace an address on the Bacnet IP network. The Object ID or Bacnet Device Instance must be set to a UNIQUE number between **1 and 4194302**.

The **IP Port** under Network-IpPort must be Enabled, the adapter can be selected to reflect which adapter the Bacnet network is connected to.

IP networks are usually addressed as 1, with other Bacnet Network Numbers ranging from **2 to 65534**.

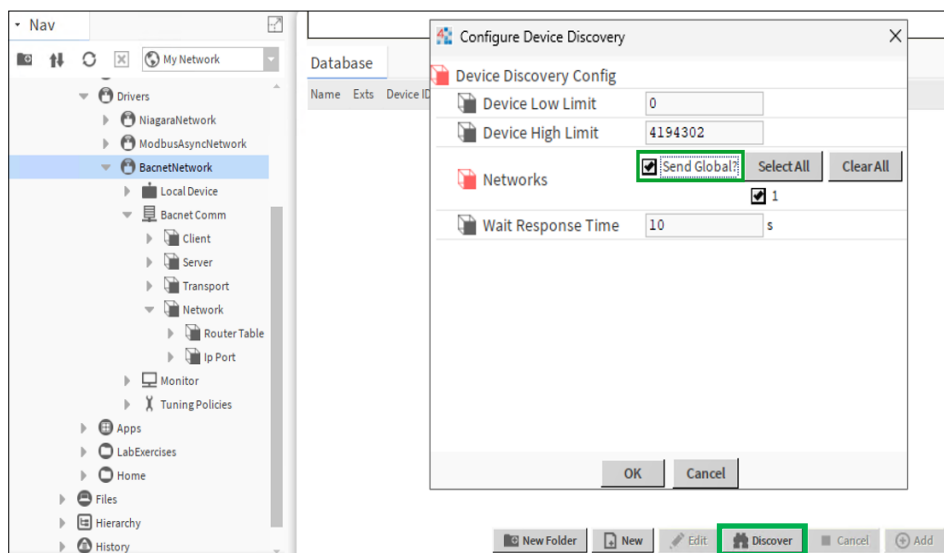
Device Instances must not be duplicated across Networks.



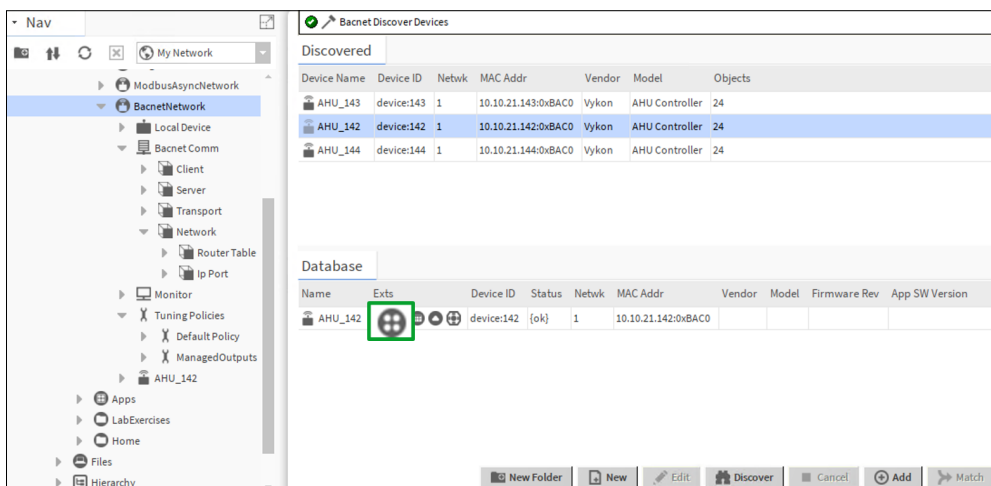
One or more **Tuning Policy or Policies** should be set up to manage communication efficiency and prevent network congestion and device latency. Some properties can be disabled to stop unnecessary comms on the network and ensure smooth communication between devices. Multiple tuning policies are advisable depending on the urgency and importance of the devices or properties they are intended for.

Discovering Devices

Bacnet devices are discovered by double clicking on the **BacnetNetwork** to show the **BacnetDeviceManager** and clicking Discover. Ticking Send Global will discover devices across all network numbers.



Discovering Points



Discovered devices are then shown in the top half of the device manager and can be dragged into the station's database. The device's Points extension can then be double clicked to move on to the points discovery.

Points can be multi selected and added to the database in groups. **Read only points** such as temp sensors can be clicked and dragged into the database without further changes or configuration.

Discovered						
Object Name	Object ID	Property ID	Index	Value	Description	
ReturnTemp	analogInput:10	presentValue		22.04		
CoolSetpoint	analogValue:0	presentValue		25.00		
HeatSetpoint	analogValue:1	presentValue		21.00		
PumpFlowStatus	binaryInput:0	presentValue		Active		
Pump1Enable	binaryOutput:3	presentValue		Active		
Pump2Enable	binaryOutput:4	presentValue		Inactive		

Database						
Name	Out	Object ID	Property ID	Index	Read	Write
SupplyTemp	23.4 [ok]	analogInput:9	Present Value	-1	Polled	readonly
ReturnTemp	21.6 °C [ok]	analogInput:10	Present Value	-1	Polled	readonly

Writable points (= analogue, digital or multistate Values or Outputs) must be **Enabled** and have a **TuningPolicy** applied.

Setpoints or switches (= analogue, digital or multistate Values) must also have their type changed as they will be added as non-writable points by default.

Facets are taken across from the Bacnet device if offered and will not need to be set up manually.

Name	Type	Enabled	Object ID	Property ID	Index	Tuning Policy Name	Data Type	Read
CoolSetpoint	NumericPoint	true	analogValue:0	Present Value	-1	defaultPolicy	REAL	unsubscribed
HeatSetpoint	NumericPoint	true	analogValue:1	Present Value	-1	defaultPolicy	REAL	unsubscribed

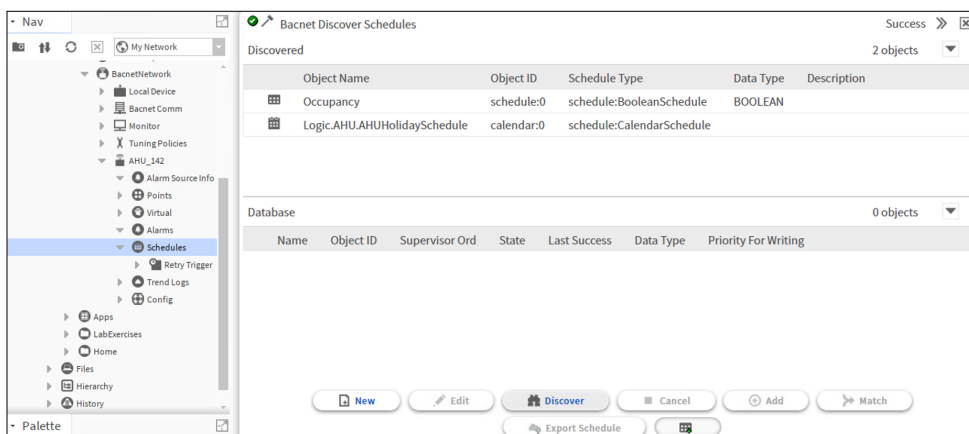
Bacnet Device Alarms

Bacnet Device Alarms can be routed through an alarm class of choice by selecting a Bacnet device's **alarm extension** and assigning the relevant alarm class in the station from the dropdown menu on the property sheet.

Bacnet Schedules

Bacnet Schedules can be imported to the station for viewing, and station schedules can be exported to the Bacnet schedule to take on the same times as the relevant master schedule. To export the times from one of the station schedules to Bacnet, the Bacnet **Schedule Export Manager** must be opened under the device's **schedules extension**.

The schedule(s) are discovered in the Bacnet Schedule Export Manager and added to the database



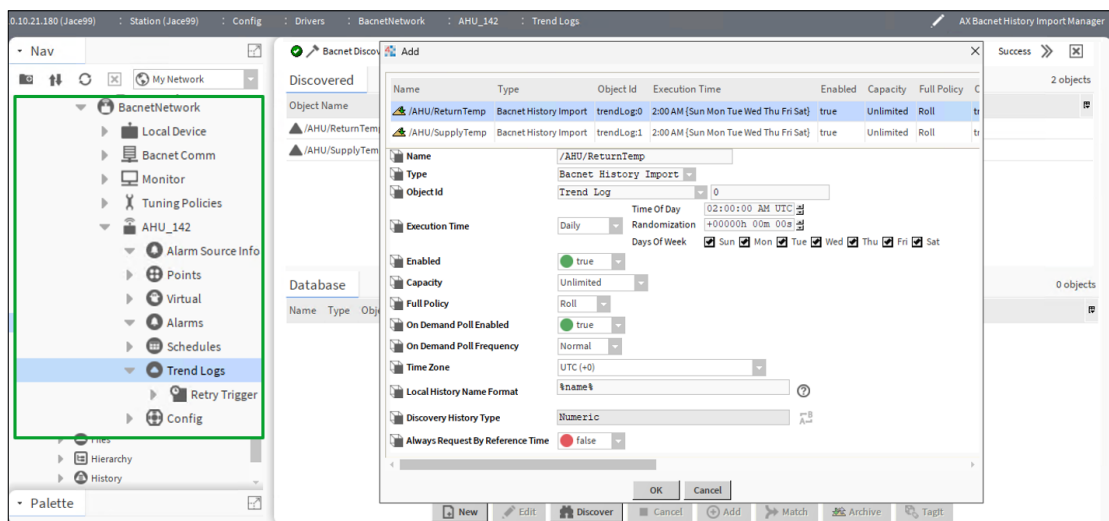
Name	Object ID	Supervisor Ord	Enabled	Execution Time	Data Type	Prio
Occupancy	schedule:0	null	true	5 minutes [Sun Mon Tue Wed Thu Fri Sat]	BOOLEAN	16

Name	Occupancy
Object ID	schedule 0
Supervisor Ord	syncNetwork/MainPlant/points/PlantRoom/HeatingSchedule
Enabled	true
Execution Time	5 minutes [Sun Mon Tue Wed Thu Fri Sat]
Data Type	BOOLEAN
Priority For Writing	16 [1 - 16]
Skip Writes	
Write Enum As	Unsigned
Out Of Service	false

The relevant schedule in the station must be selected in the **SupervisorOrd** of the Add window to ensure its times are exported to the Bacnet schedule so that the station is in control of the Bacnet device's times.

Bacnet History Extensions

Existing Bacnet History Extensions can be imported into the station. This is done by double clicking on the **Trend Logs** ext of the Bacnet device and discovering the available histories in the **History Import Manager** and adding them to suit.



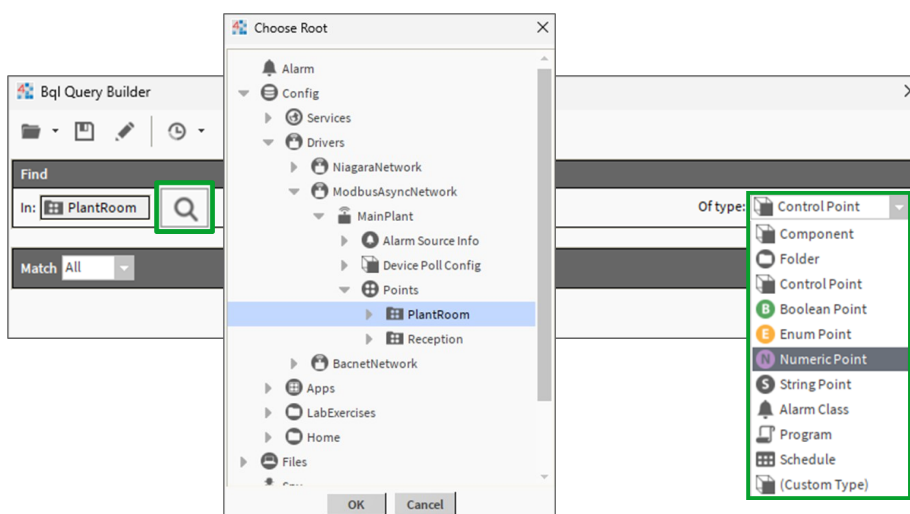
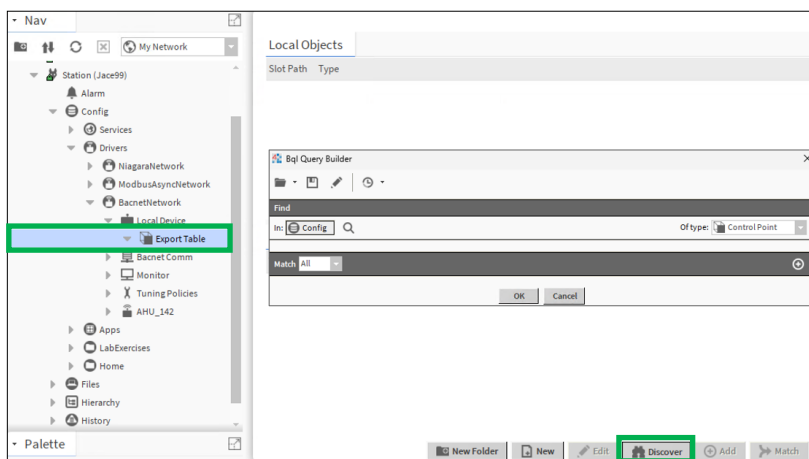
Database							
Name	Type	Object Id	Status	State	Last Success	On Demand Poll Enabled	On Demand Poll Frequency
/AHU/ReturnTemp	Bacnet History Import	trendLog:0	{ok}	Idle	13-Feb-25 3:10	true	Normal
/AHU/SupplyTemp	Bacnet History Import	trendLog:1	{ok}	Idle	13-Feb-25 3:10	true	Normal

The history values will be archived at the chosen time, but can be triggered manually for an immediate import by clicking Archive at the bottom of the page.

Exporting Niagara Points to Bacnet

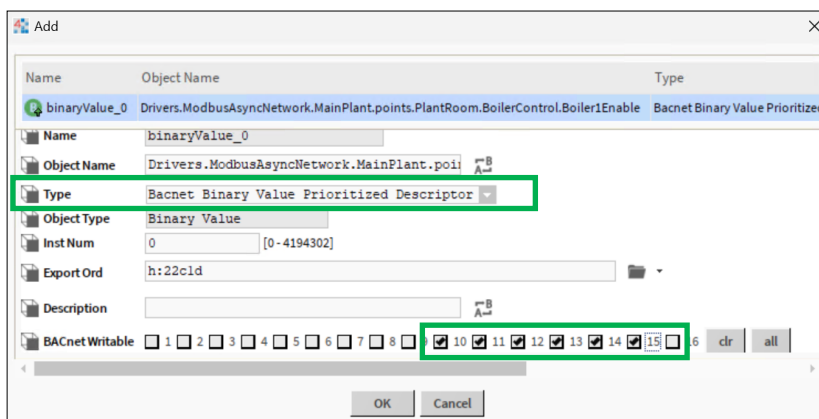
Points from within the station can be made discoverable to other devices on the Bacnet network as a native Bacnet point by double clicking on the **Export Table** under the local Bacnet Device in the NavTree.

The required point is discovered within the station using the BQL Query Builder.



The **BQL Query Builder** discovers components within the station. The magnifying glass icon defines the search area, and the OfType dropdown specifies the point type to be discovered.

Read only points can be added as is, but **writable points** must have their **Type** changed to **Prioritized Descriptor** and the Writable slots enabled to ensure other devices can write to them if required.



Local Objects		106 objects					
Slot Path	Type						
 /Drivers/ModbusAsyncNetwork/MainPlant/points/PlantRoom/BoilerPumpsFlow	control:BooleanWritable						
 /Drivers/ModbusAsyncNetwork/MainPlant/points/PlantRoom/LoopPoint	kitControl:LoopPoint						
 /Drivers/ModbusAsyncNetwork/MainPlant/points/PlantRoom/BoilerControl/DemandSignalFromLoop	control:NumericWritable						
 /Drivers/ModbusAsyncNetwork/MainPlant/points/PlantRoom/BoilerControl/Stage1Tstat	kitControl:Tstat						
 /Drivers/ModbusAsyncNetwork/MainPlant/points/PlantRoom/BoilerControl/Stage2Tstat	kitControl:Tstat						
 /Drivers/ModbusAsyncNetwork/MainPlant/points/PlantRoom/BoilerControl/Stage1Reqd	control:BooleanWritable						
Exported Objects		6 objects					
Target Name	Object Name	Object Type	Inst Num	Value	Export	BACnet Writable	
 OutsideAirTemp	Drivers.ModbusAsyncNetwork.MainPlant.points.PlantRoom.OutsideAirTemp	Analog Input	0	17.0 °C [ok] @ 10	[ok]	no	
 Office	LabExercises.BasicsLab.Office	Large Analog Value	1	20.0 °C [ok] @ def	[ok]	in16	
 MeetingRoom	LabExercises.BasicsLab.MeetingRoom	Analog Input	2	18.0 °C [ok] @ def	[ok]	no	
 Kitchen	LabExercises.BasicsLab.Kitchen	Analog Input	3	22.5 °C [ok] @ def	[ok]	no	
 FrostSP	Drivers.ModbusAsyncNetwork.MainPlant.points.PlantRoom.FrostSP	Analog Value	568	4.0 °C [ok] @ def	[ok]	in12,in13,in15,in16	
 Boiler1Enable	Drivers.ModbusAsyncNetwork.MainPlant.points.PlantRoom.Boiler1Enable	Binary Value	0	Enable [ok] @ 16	[ok]	in10,in11,in12,in13,in14,in15	

The exported objects are shown and writable points can be made to display the writable slots.