

**AXTCom Driver  
User Guide**

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## Installation

Install `tcom.jar` on the computer where Niagara AX Workbench will run. To install, place a copy of the file in the modules directory of your Niagara AX installation. This is typically `C:\Niagara\Niagara-3.n.nnn\modules`.

Install **tcom** module on the target station. Using a Niagara AX workbench where the module has already been installed, connect to the stations platform service. Go to the software manager and install **tcom**.

Apart from installing the `4.n.nn` version of the Niagara distribution files in the JACE, make sure to install the **tcom** module, (if not already present, or upgrade if an older revision). For more details, see “**About the Commissioning Wizard**” in the JACE Niagara AX Install and Startup Guide.

Following this, the station is now ready for TCom software integration, as described in the rest of this document.

## Requirement

- **Niagara AX workbench 3.0.xx.x or higher.**

1. TCP/IP.

- **Niagara AX platform JACE support:**

1. JACE-3E.
2. JACE 6xx.
3. JACE 7xx.
4. JACE 8000 (Titan JACE).

- **Niagara AX platform PC support:**

1. Windows 32/64 bit operating system.
2. Linux 32/64 bit operating system.

- **TCom Devices support:**

1. Sedona controller platform.

- **TCom Kit requirement:**

Sedona TCom Kit version	TCom kit checksum	Niagara AX/N4 version
tcom-4.0.111.1	94dc291a	3.x/4.x.111.x.
tcom-4.0.112.2	94dc291a	3.x/4.x.112.x and newest.

## Quick Start

This section provides a collection of procedures to use the Niagara AX TCom drivers to build networks of devices with proxy points and other components. Like other Niagara AX drivers, you can do most configurations from special “manager” views and property sheets using Workbench.

- **For any of the TCom networks:**
  - [“Configure the TCom network”](#)
  - [“Add TCom devices”](#)
  - [“Create TCom proxy points”](#)

### Configure TCom Network

To add and configure a TCom network, perform the following main tasks:

- Add the TCom network, as needed:
  - [Add a TComNetwork](#)

### Add a TCom Network

#### **To add a TCom Network in the station**

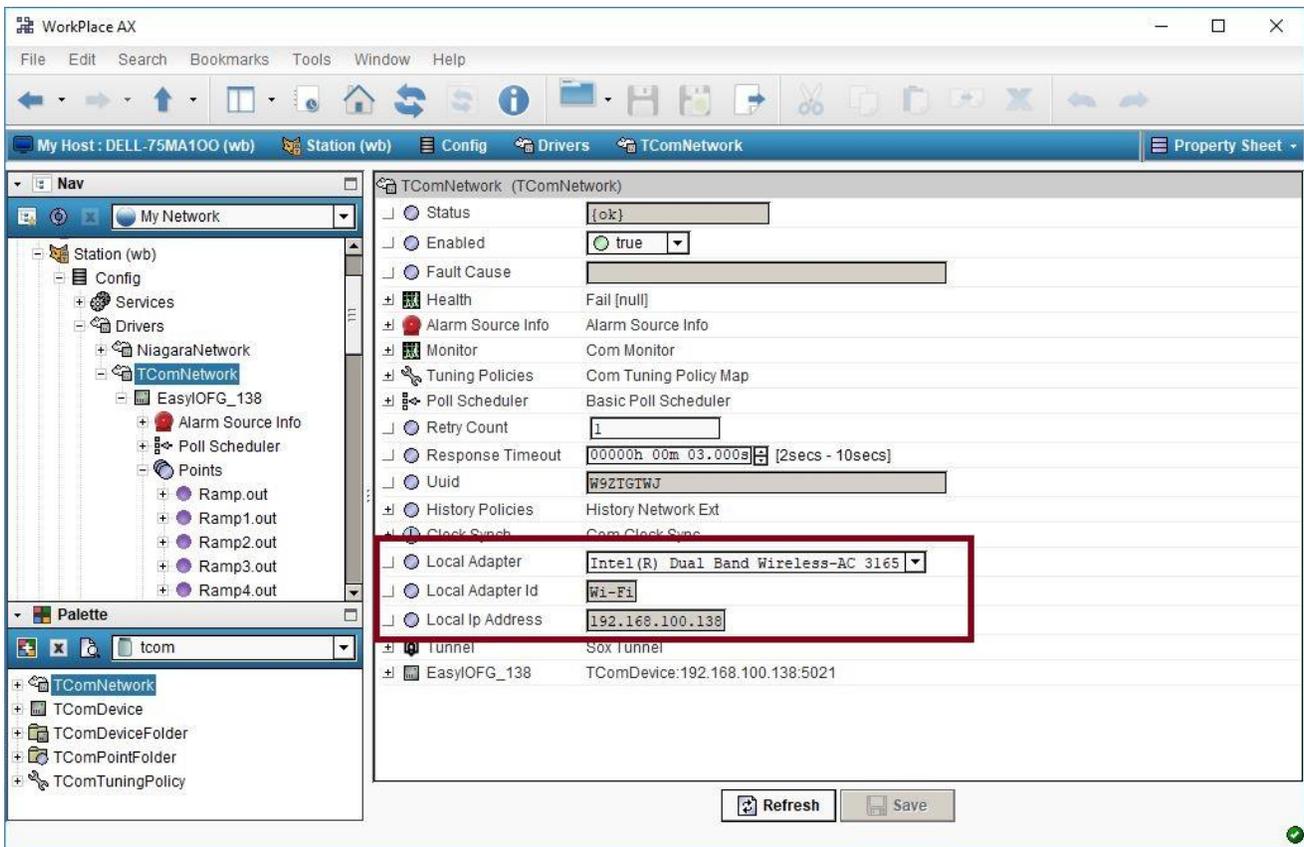
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Use the following procedure to add a TComNetwork component under the station’s Drivers Container.

To add a TComNetwork in the station:

- Double-click the station’s **Drivers** container, to bring up the **Driver Manager**.

- Click the **New** button to bring up the New network dialog. For more details, see “[Driver Manager New and Edit](#)” in the *Drivers Guide*.
- Select “TComNetwork,” number to add: 1 (or more, if multiple) and click **OK**. This brings up a dialog to name the network(s).
- Click **OK** to add the TComNetwork (s) to the station. You should have a TComNetwork named “TComNetwork” (or whatever you named it), under your Drivers folder, initially showing a status of “{ok}” and enabled as “true.”
- Select Local Adapter e.g. Onboard Ethernet Adapter en1/ Onboard Ethernet Adapter en2, this to identify which the driver map to the correct Network card.



## Add a TCom Devices

After adding a TCom Network, you can use the network’s default “device manager” view to add the appropriate TCom devices.

**Note:** You need the IP address information for each TCom device you are adding, as well as for later procedures to add proxy points under devices.

## To add a TCom device in the network

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Use the following procedure to add the correct type of TCom device in the network. To add a TCom device:

- In the Nav tree or in the Driver Manager view, double-click the client network, to bring up the device manager (TCom Device Manager). All of these device manager views operate in a similar fashion.

**Note:** For general device manager information, see the [“About the Device Manager”](#) section in the *Drivers Guide*.

- Click the **New** button to bring up the **New** device dialog.
- Select for number to add: 1 (or more, if multiple) and click **OK**. This brings up a dialog to name the device(s), enter TCom device IP address.
  - Any TCom Device needs the unique IP address in use.
- Click **OK** to add the TCom device(s) to the network. You should see the device(s) listed in the TCom Device Manager view, showing a status of “{ok}” and enabled as “true.”

If a device shows “down” check the configuration of the network and/or TCom device IP addresses. You can simply double-click a device in the device manager to review settings in an **Edit** dialog, identical to the **New** dialog when you added it.

After making any address changes, click **Save**, then right-click the device and select **Actions > Ping**.

## Create TCom Proxy Point

As with device objects in other drivers, each TCom device has a **Points** extension that serves as the container for proxy points. The default view for any Points extension is the Point Manager (and in this case, the “TCom Point Manager”). You use it to add TCom proxy points under any TCom device.

**Note:** Unlike the point managers in many other drivers, the **TCom Point Manager** does offer a “Learn mode” with a **Discover** button and pane. Otherwise you can simply use the **New** button to create proxy points, referring to the vendor’s documentation for the addresses of data items in each TCom device.

## To add TCom proxy points

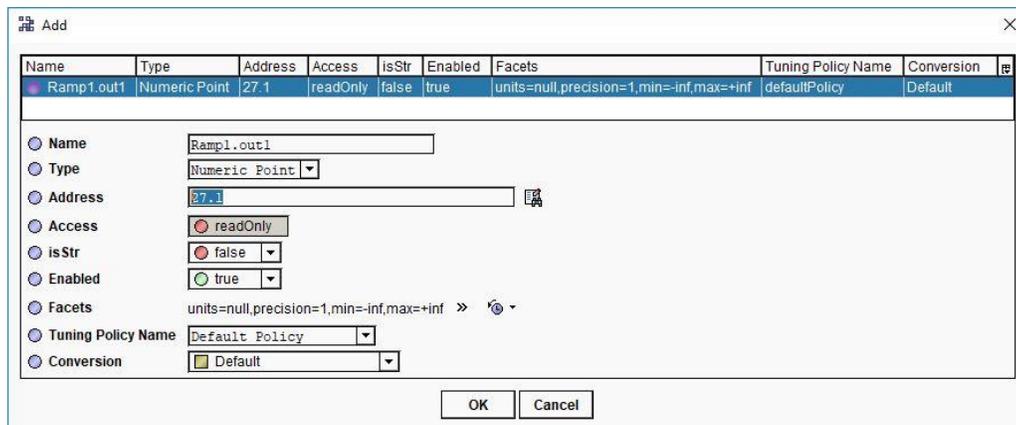
Once a TCom device is added, you can add proxy points to read and write data. If programming online (and the device shows a status of "{ok}"), you can get statuses and values back immediately, to help determine if point configuration is correct. Use the following procedure:

To create TCom proxy points in a device:

- In the **Device Manager**, in the **Exts** column, double-click the Points icon  in the row representing the device you wish to create proxy points.

This brings up the **TCom Point Manager**.

- (Optional) Click the **New Folder** button to create a new points folder to help organize points, and give it a short name, such as "TempNo1", or whatever name works for your application. You can repeat this to make multiple points folders, or simply skip this step to make all proxy points in the root of **Points**. Note that all points' folders have their own **TCom Point Manager** view, just like **Points**. If making points folders, double-click one to move to its location (and see the point manager).
- At the location needed (**Points** root, or a points folder), click the **New** button. The **New** points dialog appears, in which you select a point Type and address .



Name	Type	Address	Access	isStr	Enabled	Facets	Tuning Policy Name	Conversion
Ramp1.out1	Numeric Point	27.1	readOnly	false	true	units=null,precision=1,min=-inf,max=+inf	defaultPolicy	Default

Name: Ramp1.out1  
 Type: Numeric Point  
 Address: 27.1  
 Access: readOnly  
 isStr: false  
 Enabled: true  
 Facets: units=null,precision=1,min=-inf,max=+inf  
 Tuning Policy Name: Default Policy  
 Conversion: Default

OK Cancel

For more details, see ["About TCom proxy points"](#)

- Click **OK** to add the proxy point(s) to the Points extension (or to the current points folder), where each shows as a row in the point manager.

If parameter correctly, each point should have a status of "{ok}" with a polled value displayed.

- If a point shows a "{fault}" status, check its ProxyExt "Fault Cause" property value, which typically includes a TCom "exception code" string, such as "Read fault: illegal data address". In such a case, re-check the address in the point against the documented address for the data item.
- Continue to add proxy points as needed under the **Points** extension of each TCom device. As needed, double-click one or more existing points for the **Edit** dialog, similar to the **New** dialog used to create the points. This is commonly done for re-editing items like data addresses, names, or facets.

### Create TCom Schedule Point

As with device objects in other drivers, each TCom device has a **Schedule** extension that serves as the container for schedule export point. The default view for any Schedule export point is the Schedule Manager (and in this case, the "TCom Schedule Manager"). You use it to add TCom schedule export points under any TCom device.

*Note : Make sure the Sedona controller has install the Sedona "easyioSchedule" or "easyioEnergy" kit and has schedule object ready.*

*Note: Unlike the schedule managers in many other drivers, the TCom Schedule Manager does offer a "Learn mode" with a Discover button and pane. Otherwise you can simply use the New button to create schedule export points, referring to the vendor's documentation for the addresses of data items in each TCom device.*

### To add TCom Schedule Exports points

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Once a TCom device is added, you can add schedule export points to read data. If programming online (and the device shows a status of "{ok}"), you can get statuses and values back immediately, to help determine if schedule export points configuration is correct. Use the following procedure:

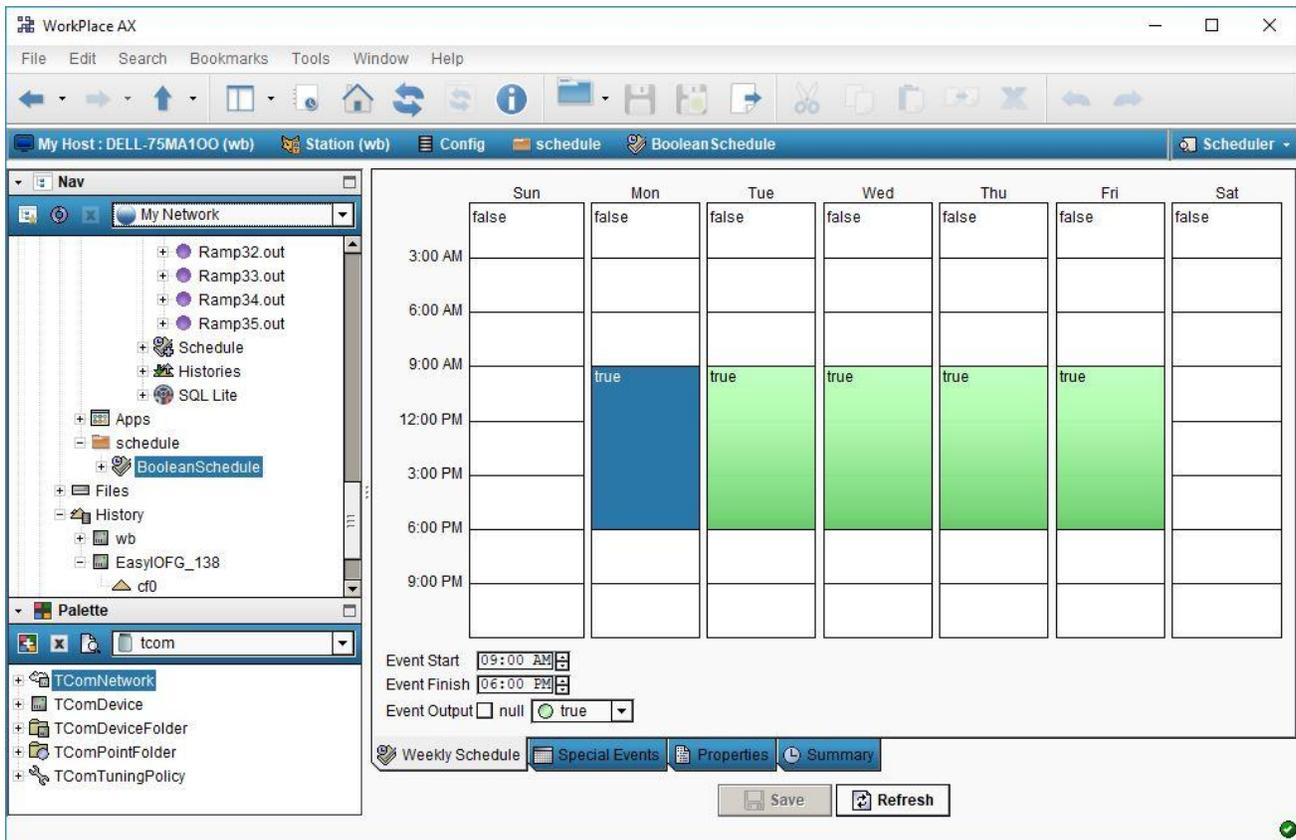
To create TCom Exports points in a device:

- In the **Device Manager**, in the **Exts** column, double-click the Schedules icon  in the row representing the device you wish to create schedule export points.

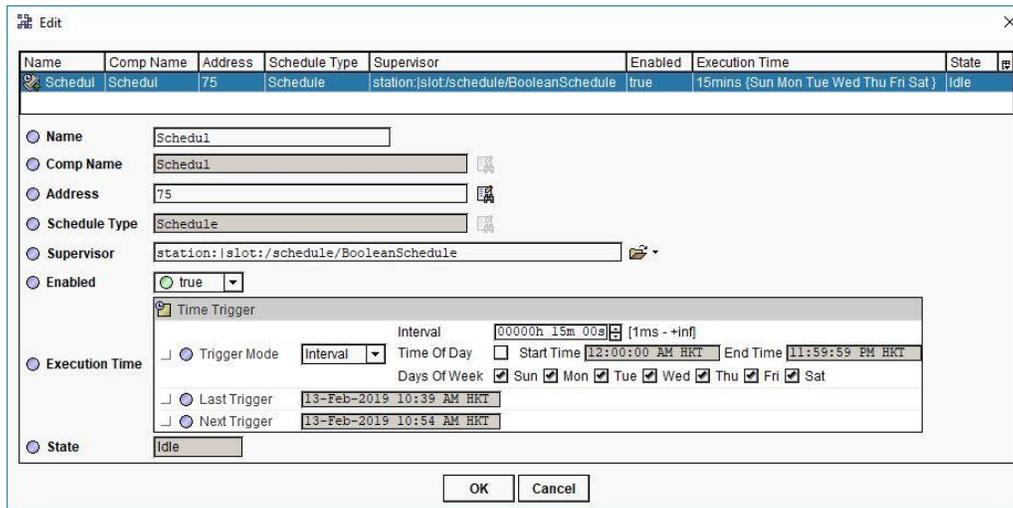
This brings up the **TCom Schedule Manager**.

- First create the standard Niagara AX Boolean schedule and place to any of the station folder. You can has multiple Niagara AX Boolean schedule or it can be share to attach to the multiple Schedule export point.

- The Niagara AX Boolean schedule only can use 2 event per day.



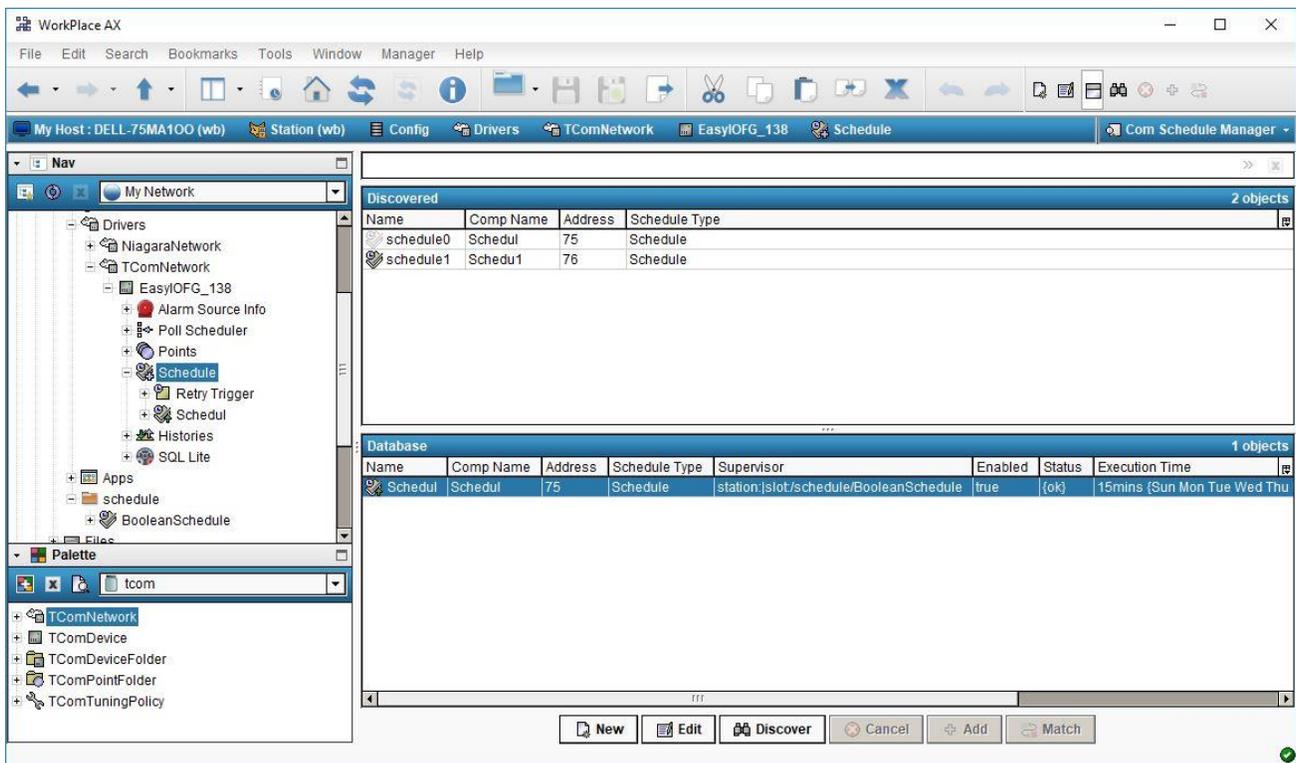
- At the location needed (**Schedule** root), click the **New** button. The **New** schedule dialog appears, in which you select a name, id, execution time, supervisor ord and etc. Make sure the supervisor ord has link to the master schedule by using the Niagara AX standard schedule.



- Click **OK** to add the schedule export point(s) to the Schedule export extension where each shows as a row in the schedule manager.

If parameter correctly, each point should have a status of "{ok}" .

- If a schedule shows a "{fault}" status, check its Schedule Export "Fault Cause" property value, which typically includes a TCom "exception code" string, such as "Read fault: illegal data address". In such a case, re-check the address in the point against the documented address for the data item.
- By default the execution time to export the schedule to the Sedona controller is Interval 5 minutes. To export immediately without waiting the execute time to trigger simply select the schedule export point action → and execute.
- Continue to add schedule export points as needed under the **Schedule** extension of each TCom device. As needed, double-click one or more existing schedule for the **Edit** dialog, similar to the **New** dialog used to create the schedule. This is commonly done for re-editing items like data addresses, names, or execution time.



## Create TCom History Point

As with device objects in other drivers, each TCom device has a **Histories** extension that serves as the container for histories points. The default view for any Histories extension is the History Manager (and in this case, the "TCom History Manager"). You use it to add TCom histories points under any TCom device.

*Note: Unlike the history managers in many other drivers, the TCom Histories Manager does offer a "Learn mode" with a Discover button and pane. Otherwise you can simply use the New button to create proxy points, referring to the vendor's documentation for the addresses of data items in each TCom device.*

### To add TCom History points

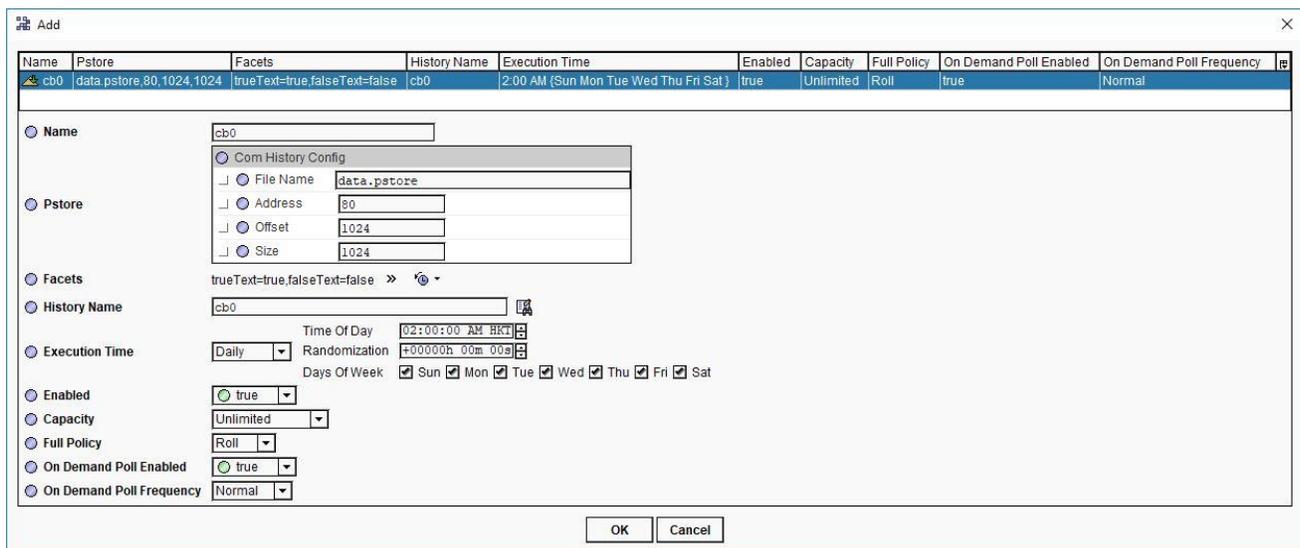
Once a TCom device is added, you can add history points to read data. If programming online (and the device shows a status of "{ok}"), you can get statuses and values back immediately, to help determine if history configuration is correct. Use the following procedure:

To create TCom history points in a device:

- In the **Device Manager**, in the **Exts** column, double-click the Points icon  in the row representing the device you wish to create history points.

This brings up the TCom History Manager.

- At the location needed (**Histories** root), click the **New** button. The **New** histories dialog appears, in which you select a name, id, execution time, capacity, full policy and etc.



Name	Pstore	Facets	History Name	Execution Time	Enabled	Capacity	Full Policy	On Demand Poll Enabled	On Demand Poll Frequency
cb0	data.pstore.80.1024.1024	trueText=true,falseText=false	cb0	2:00 AM (Sun Mon Tue Wed Thu Fri Sat)	true	Unlimited	Roll	true	Normal

**Name**: cb0

**Com History Config**

- File Name: data.pstore
- Address: 80
- Offset: 1024
- Size: 1024

**Facets**: trueText=true,falseText=false

**History Name**: cb0

**Execution Time**: Daily, Time Of Day: 02:00:00 AM HKT, Randomization: +000000h 00m 00s, Days Of Week: Sun, Mon, Tue, Wed, Thu, Fri, Sat

**Enabled**: true

**Capacity**: Unlimited

**Full Policy**: Roll

**On Demand Poll Enabled**: true

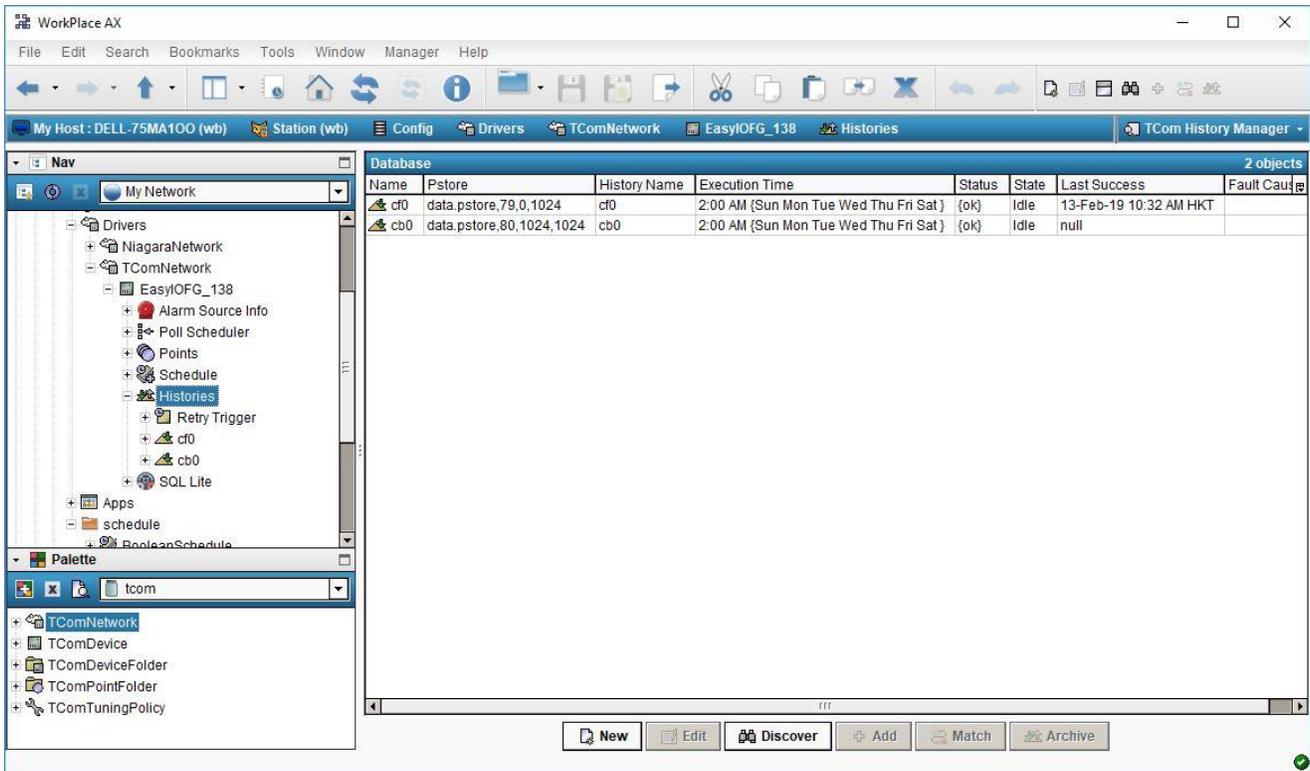
**On Demand Poll Frequency**: Normal

OK Cancel

- Click **OK** to add the history point(s) to the Histories extension where each shows as a row in the history manager.

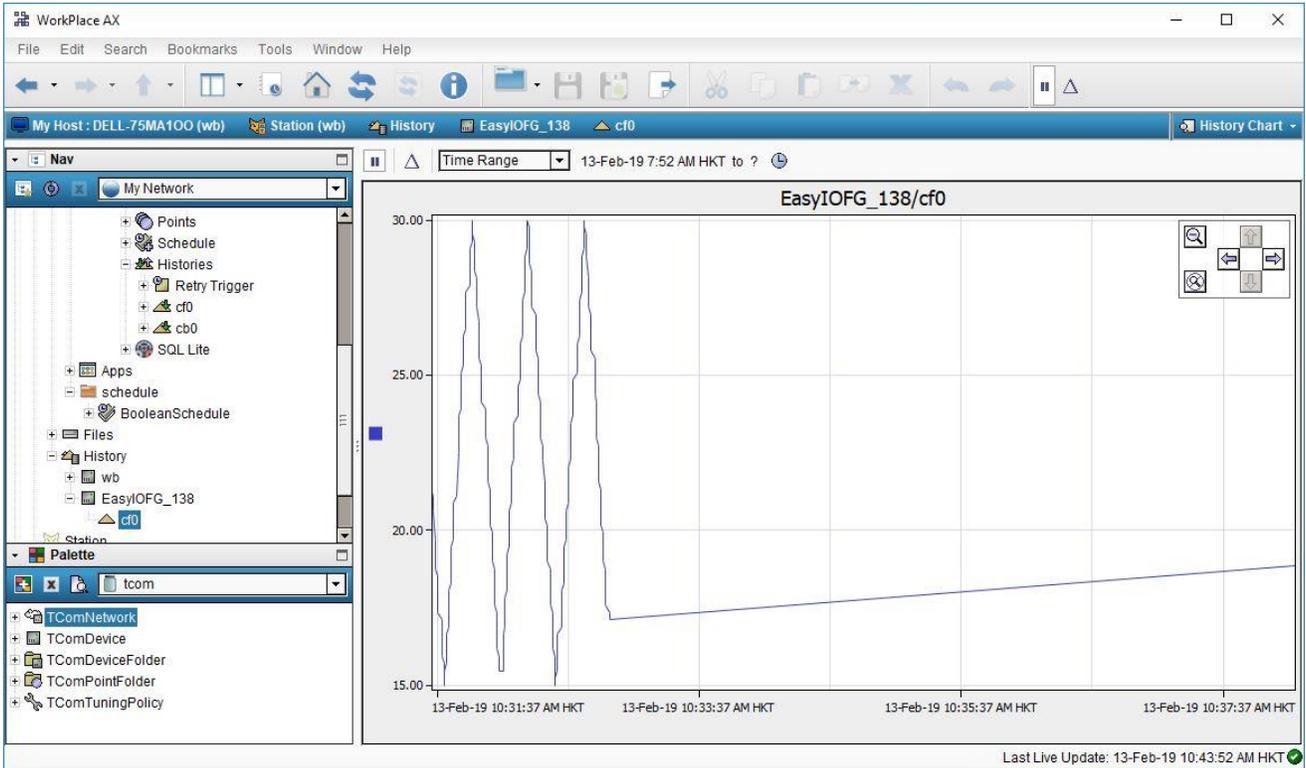
If parameter correctly, each point should have a status of "{ok}" .

- If a history shows a "{fault}" status, check its HistoryImport "Fault Cause" property value, which typically includes a TCom "exception code" string, such as "Read fault: illegal data address". In such a case, re-check the address in the point against the documented address for the data item.
- Continue to add history points as needed under the **Histories** extension of each TCom device. As needed, double-click one or more existing points for the **Edit** dialog, similar to the **New** dialog used to create the histories. This is commonly done for re-editing items like data addresses, names, or facets.



- Once every setting is done, user could manually "**Archive**" the data without waiting the execution time trigger. Once archive successful the "last success" time stamp will record and straight away the history record can be view from History Nav.

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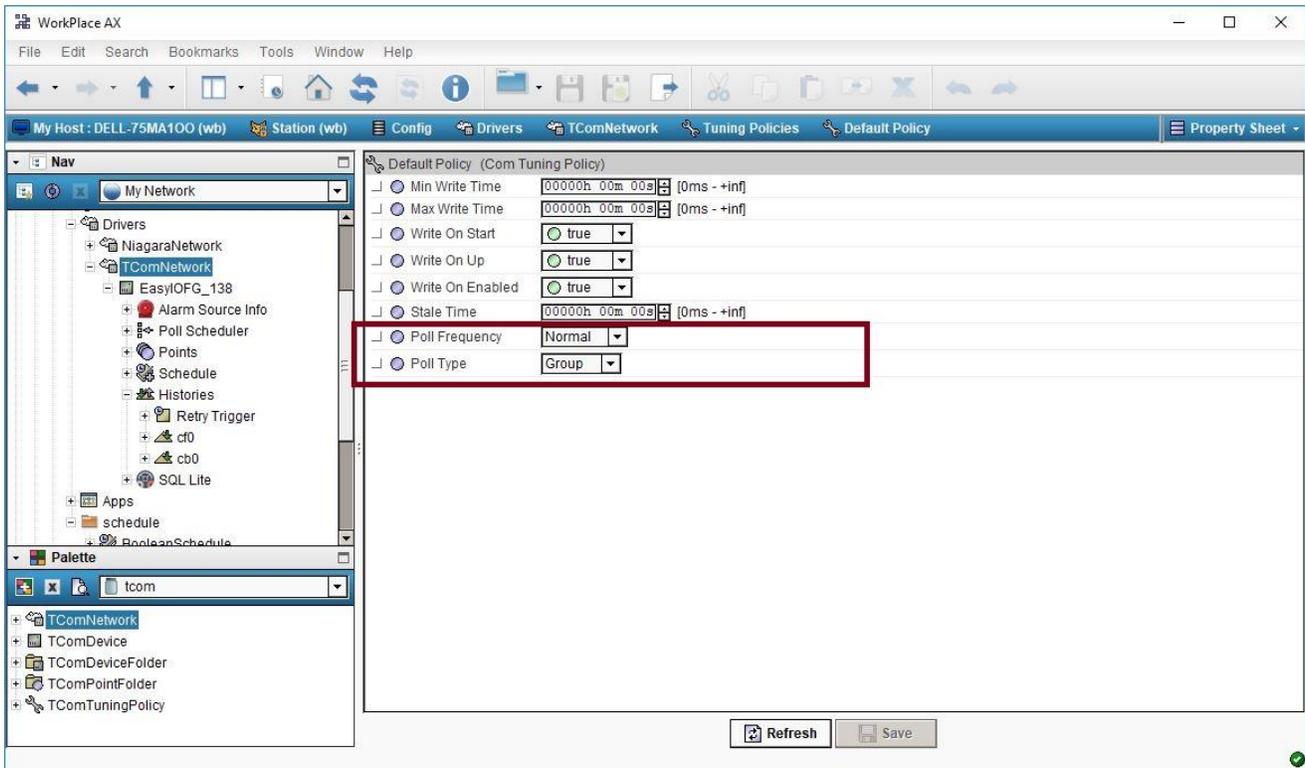


**EasyIOFG\_138/cf0** 500 records

Timestamp	Trend Flags	Status	Value
13-Feb-19 10:44:21 AM HKT	{}	{ok}	28.83
13-Feb-19 10:44:21 AM HKT	{}	{ok}	29.06
13-Feb-19 10:44:20 AM HKT	{}	{ok}	29.54
13-Feb-19 10:44:20 AM HKT	{}	{ok}	29.77
13-Feb-19 10:44:20 AM HKT	{}	{ok}	30.00
13-Feb-19 10:44:20 AM HKT	{}	{ok}	29.77
13-Feb-19 10:44:20 AM HKT	{}	{ok}	29.53
13-Feb-19 10:44:20 AM HKT	{}	{ok}	29.30
13-Feb-19 10:44:19 AM HKT	{}	{ok}	29.30
13-Feb-19 10:44:19 AM HKT	{}	{ok}	28.60
13-Feb-19 10:44:19 AM HKT	{}	{ok}	28.84
13-Feb-19 10:44:19 AM HKT	{}	{ok}	28.37
13-Feb-19 10:44:19 AM HKT	{}	{ok}	29.07
13-Feb-19 10:44:17 AM HKT	{}	{ok}	27.90
13-Feb-19 10:44:17 AM HKT	{}	{ok}	28.13
13-Feb-19 10:44:17 AM HKT	{}	{ok}	27.66
13-Feb-19 10:44:17 AM HKT	{}	{ok}	27.43
13-Feb-19 10:44:17 AM HKT	{}	{ok}	26.96
13-Feb-19 10:44:17 AM HKT	{}	{ok}	27.19
13-Feb-19 10:44:16 AM HKT	{}	{ok}	26.02
13-Feb-19 10:44:16 AM HKT	{}	{ok}	26.73
13-Feb-19 10:44:16 AM HKT	{}	{ok}	26.26
13-Feb-19 10:44:16 AM HKT	{}	{ok}	26.49
13-Feb-19 10:44:16 AM HKT	{}	{ok}	25.79
13-Feb-19 10:44:16 AM HKT	{}	{ok}	25.55
13-Feb-19 10:44:16 AM HKT	{}	{ok}	24.38

## TCom Tuning Policy

A network's Tuning Policies holds one or more collections of "rules" for evaluating both *write requests* (e.g. to writable proxy points) as well as the acceptable "freshness" of *read requests* from polling also supported is association to different poll frequency groups (Slow, Normal, Fast). Tuning policies are *important* because they can affect the status of the driver's proxy points. In the network's property sheet, expand the Tuning Policies (Map) slot to see one or more contained Tuning Policies. Expand a Tuning Policy to see its configuration properties.



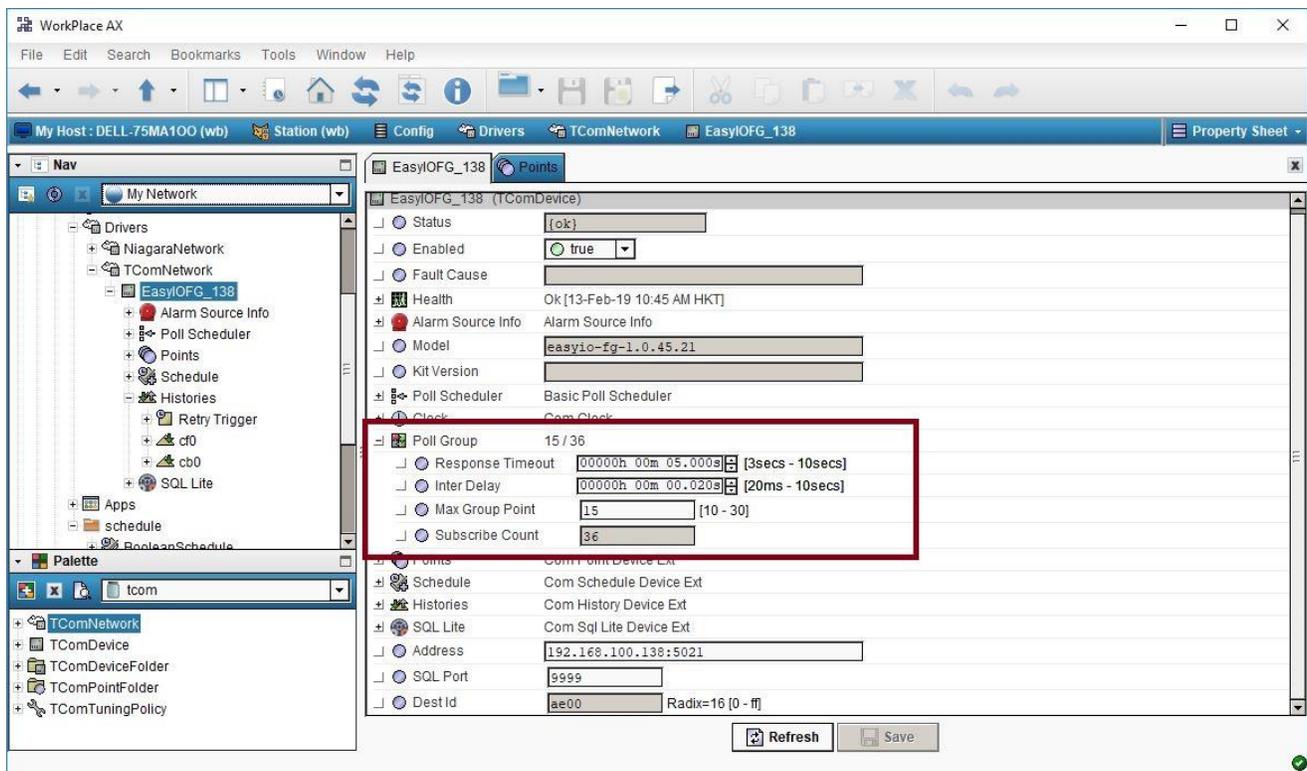
Note: By default, a driver's **TuningPoliciesMap** contains just a single **TuningPolicy** ("Default Policy"). However, you typically create *multiple* tuning policies, changing those items needed differently in each one. Then, when you create proxy points under a device in that network, you can assign each point (as needed) to the proper set of "rules" by associating it with a *specific* tuning policy.

## TCom Poll Group

The poll group is a new driver enhancement to improve the real-time data updates. Instead of polling one by one point, we are now able to poll multiple point in single poll request.

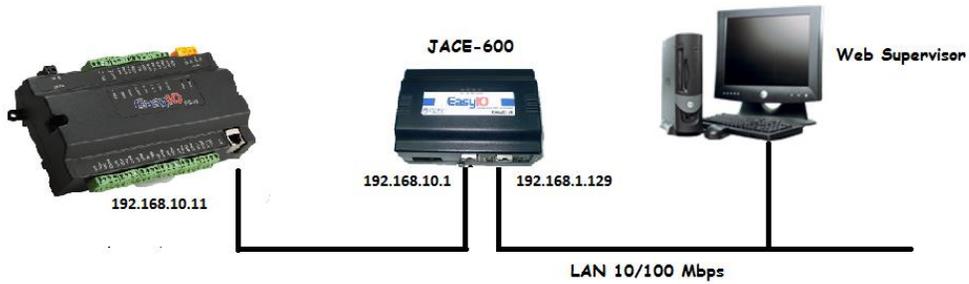
To enable the poll group go to the device properties, look for “Poll Group” properties, there is an option to setup and by default it is enable and maximum point per group is 15. The valid range of the point able to poll in single request is 10 - 30.

Another final step please ensure the tuning policy “Poll Type” has set to “Group” and the TCom point proxy extension has selected to the target tuning policy.



## TCom Sox Tunneling

A TCom Sox tunneling is the option for routing the Sox Sedona application to the JACE Primary network port (1) to JACE Secondary network port (2) or vice versa to the target Sedona controller.



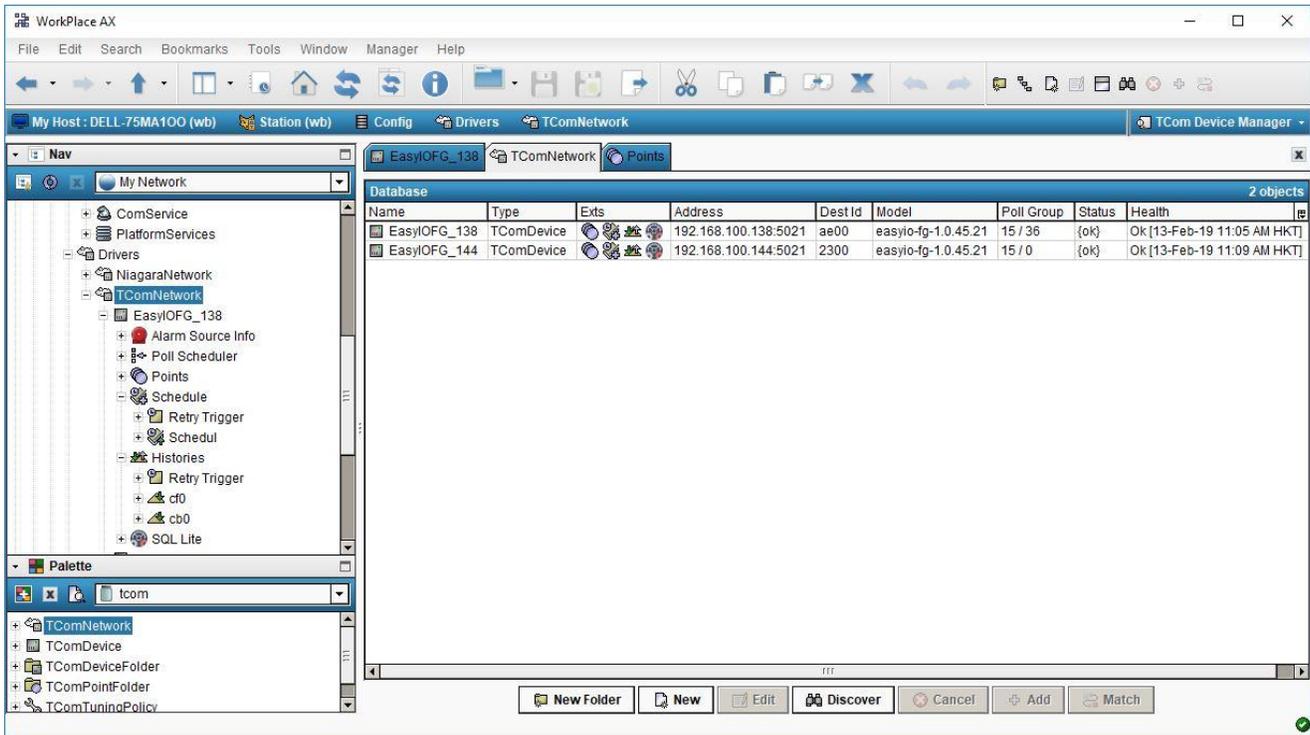
## TCom View

- [TCom Device Manager](#)
- [TCom Point Manager](#)

### TCom Device Manager

The TCom Device Manager is the default view when you double-click on a TCom Network in the Nav tree. This manager view provides a quick and easy way to display.

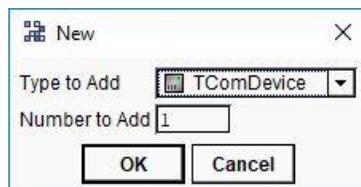
The TCom Device Manager is the default view for any TCom Network container. The TCom Device Manager is a table-based view, where each row represents a unique device. When building a network in the station, you use this view to create, edit, and delete device-level components. Below is an example TCom Device Manager view.



The view above shows a typical TCom Device Manager view.

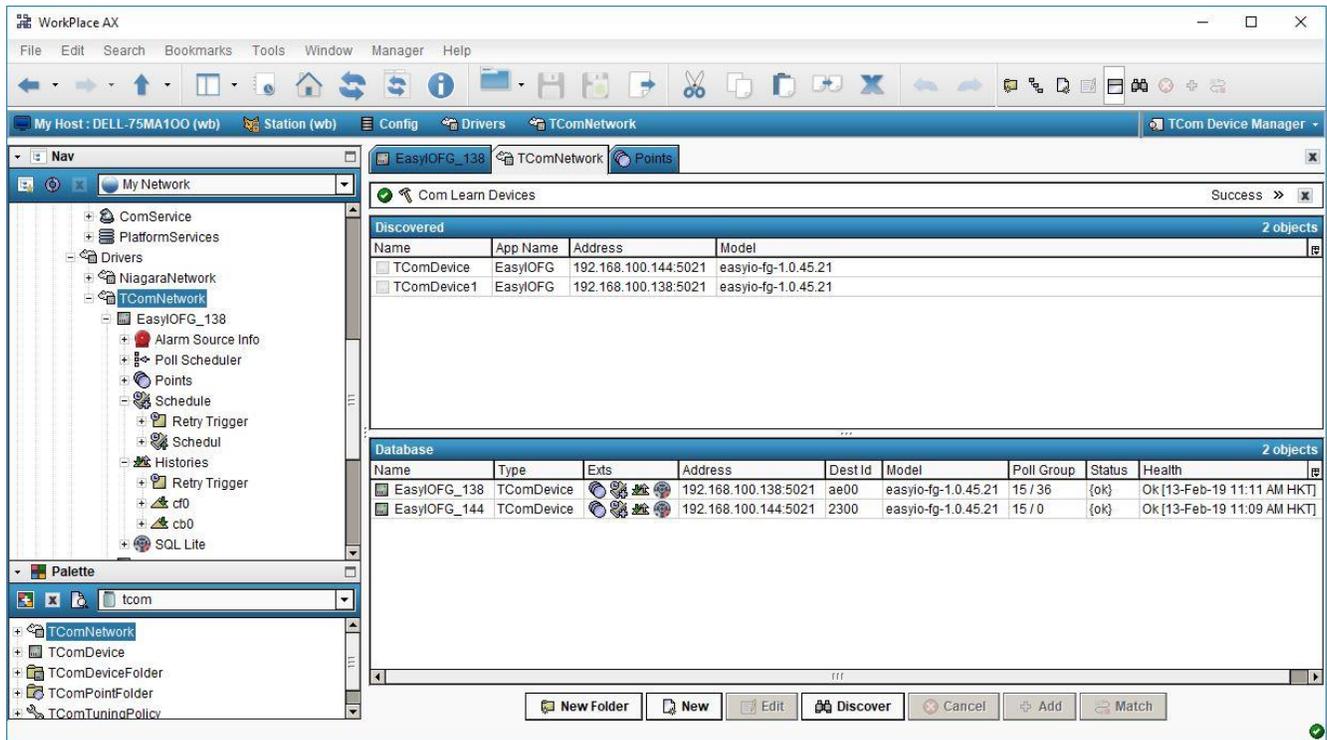
The “New Folder”, “New”, and “Edit” buttons are not unique to the TCom Device Manager, and are explained in the “Niagara AX User’s Guide” in the “Driver Architecture” section. The “Match” button is not used for the TCom driver.

You can now add the devices to the station database by clicking the “Add” button. This will pop up the “Add” dialog box:



The “Add” dialog box affords you the opportunity to tweak the display name, enabled state, and/or IP address of each of the selected devices. Click the “OK” button to add the devices to the database, or click “Cancel” to bail out.

The “Discover” button implements functionality that is unique and tailored to discovering TCom devices. By clicking the “Discover” button, the “learn” mode of the manager is invoked (the panes will be split, and a “discovery” table will be displayed in the top pane) .



Single or multiple TCom devices can be added as device by selecting the discovered row(s) in the top pane, and clicking add. Doing so will cause the “Add” dialog box to appear: Once the device(s) are satisfactorily edited, click “OK” to create the device corresponding to the device property.

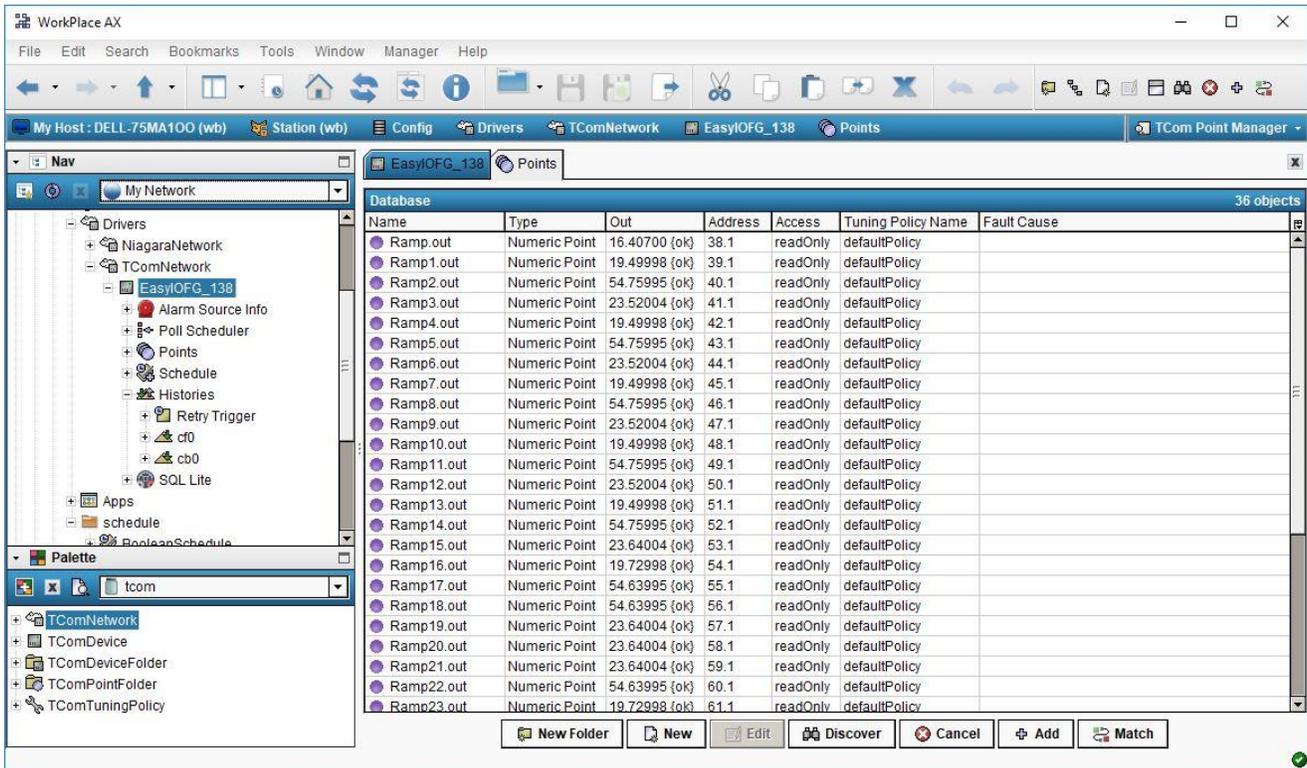
## TCom Point Manager

The TCom Point Manager is the default view when you double-click on a “points” folder (a TComPointDeviceExt type folder) under a TComDevice in the Nav tree. This manager view provides a quick and easy way to display and learn TCom points in a TCom device.

The TCom Point Manager is the default view for any TComPointDeviceExt container. The TCom Point Manager is a table-based view, where each row represents a unique TCom address within a device.

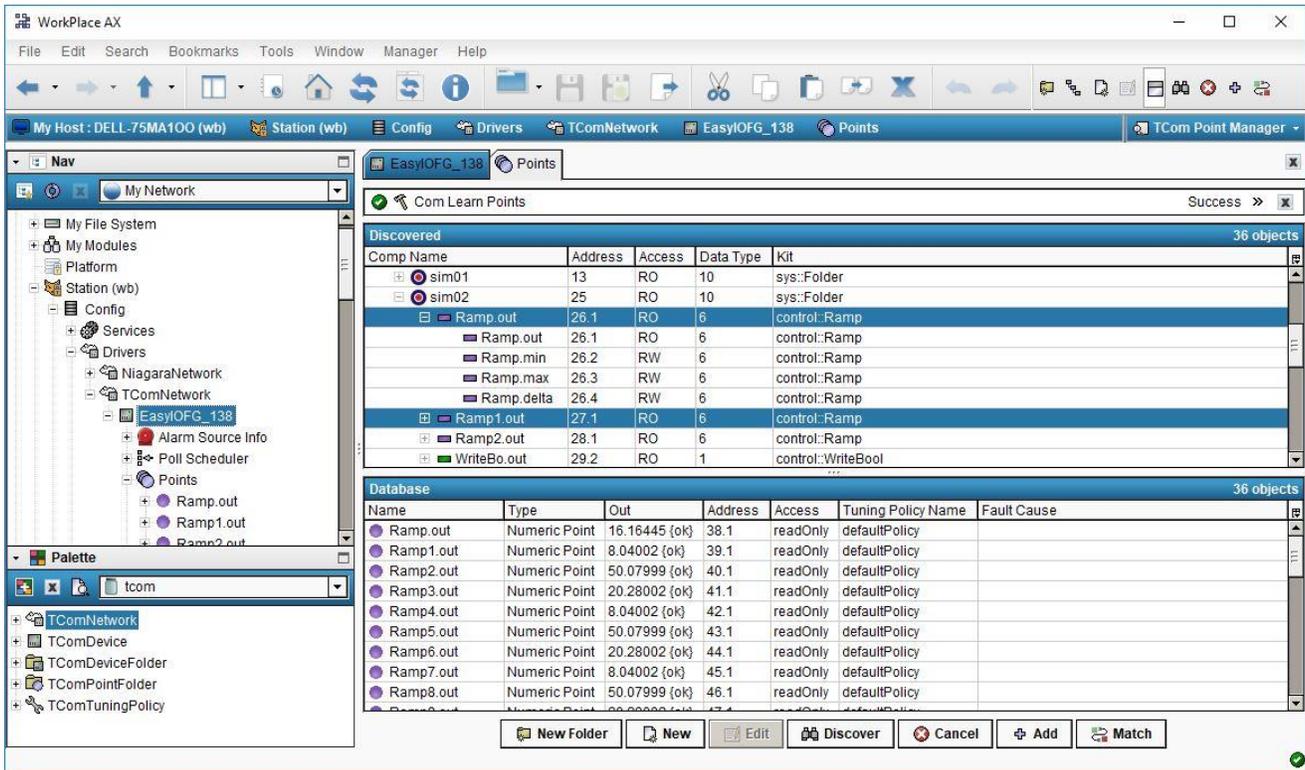
Below is an example TCom Point Manager view.

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The “New Folder”, “New”, and “Edit” buttons are not unique to the TCom Device Manager, and are explained in the “Niagara AX User’s Guide” in the “Driver Architecture” section. The “Match” button is not used for the TCom driver.

The “Discover” button implements functionality that is unique and tailored to discovering TCom devices points. By clicking the “Discover” button, the “learn” mode of the manager is invoked (the panes will be split, and a “discovery” table will be displayed in the top pane).



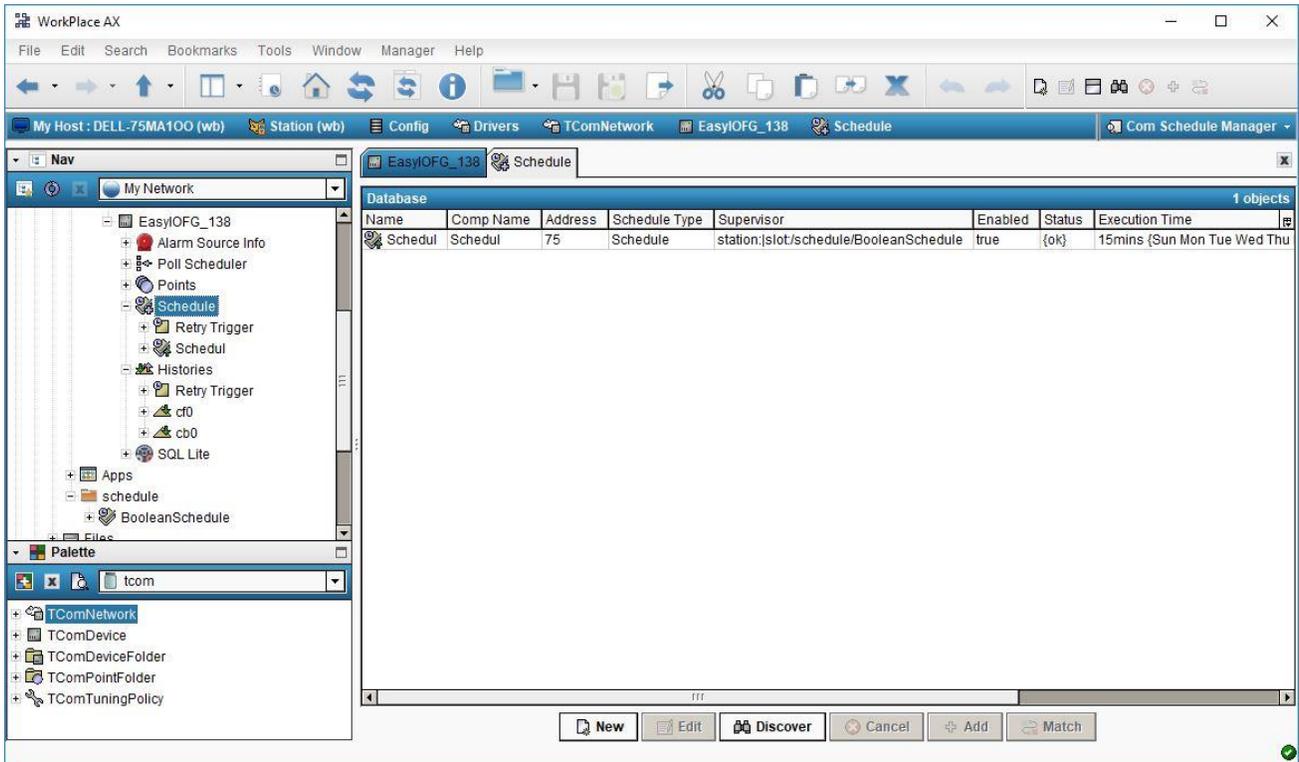
Single or multiple points can be added as control points with TComProxyExt extensions by selecting the discovered row(s) in the top pane, and clicking add. Doing so will cause the “Add” dialog box to appear: Once the point(s) are satisfactorily edited, click “OK” to create the proxy points corresponding to the point property.

## TCom Schedule Manager

The TCom Schedule Manager is the default view when you double-click on a “schedules” folder (a TComScheduleDeviceExt type folder) under a TComDevice in the Nav tree. This manager view provides a quick and easy way to display and learn TCom schedules in a TCom device.

The TCom Schedule Manager is the default view for any TComScheduleDeviceExt container. The TCom Point Manager is a table-based view, where each row represents a unique TCom address within a device.

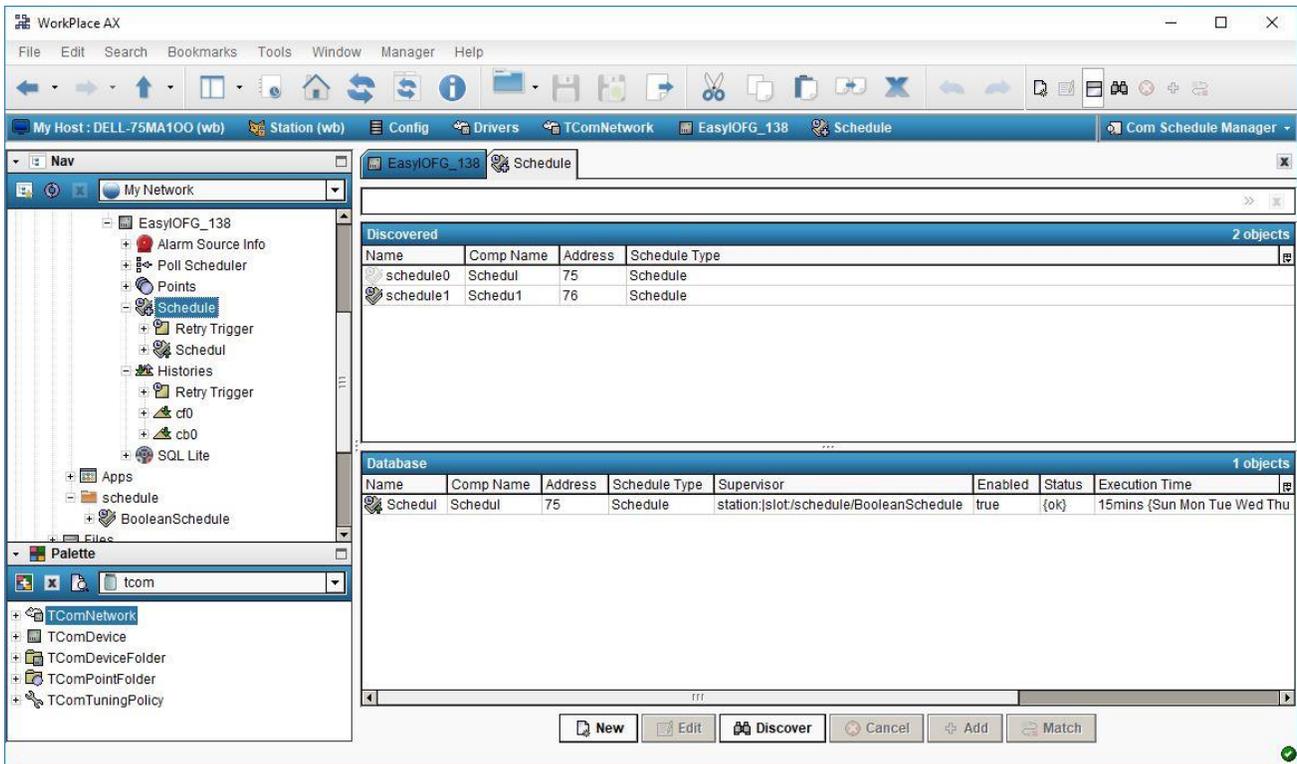
Below is an example TCom Schedule Manager view



The “New”, and “Edit” buttons are not unique to the TCom Device Manager, and are explained in the “Niagara AX User’s Guide” in the “Driver Architecture” section. The “Match” button is not used for the TCom driver.

The “Discover” button implements functionality that is unique and tailored to discovering TCom devices schedule. By clicking the “Discover” button, the “learn” mode of the manager is invoked (the panes will be split, and a “discovery” table will be displayed in the top pane) .

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Single or multiple schedule export points can be added by selecting the discovered row(s) in the top pane, and clicking add. Doing so will cause the “Add” dialog box to appear:  
Once the schedule export(s) are satisfactorily edited, click “OK” to create the schedule export points corresponding to the schedule property.



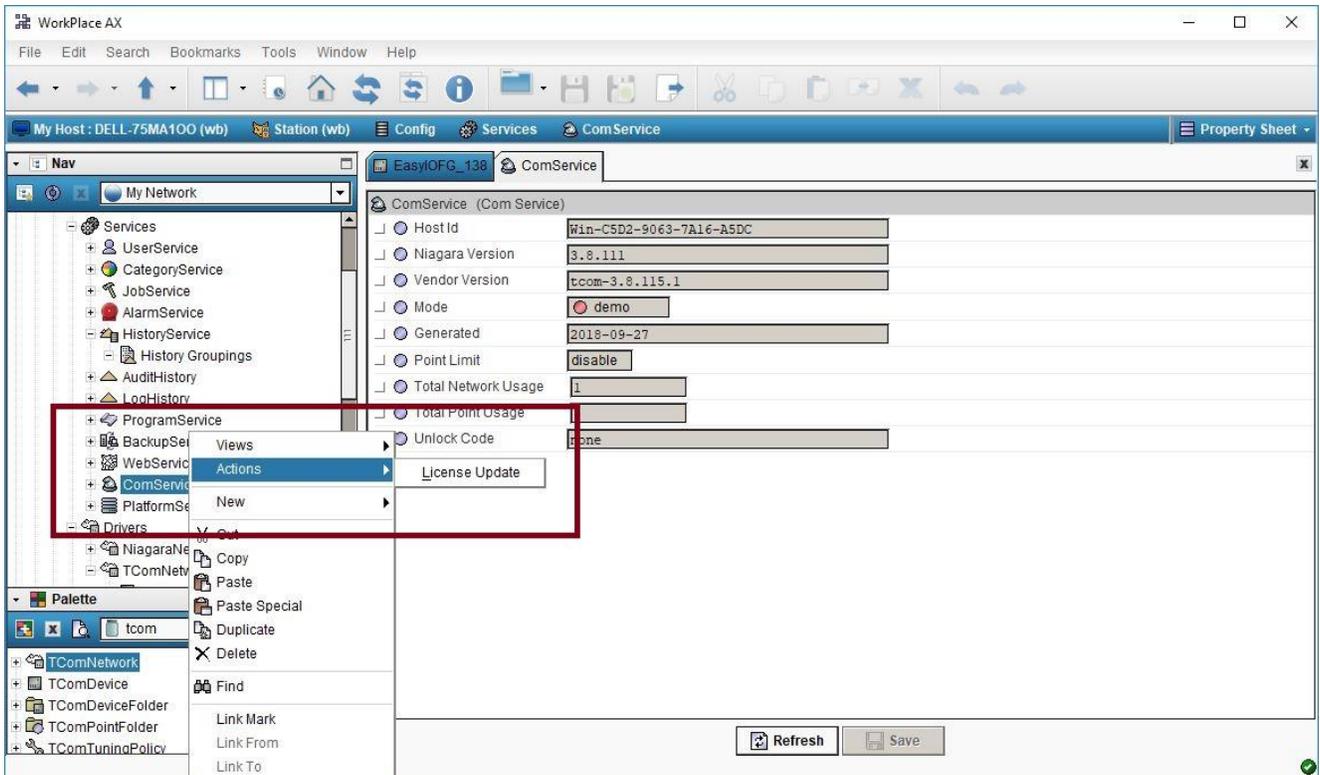
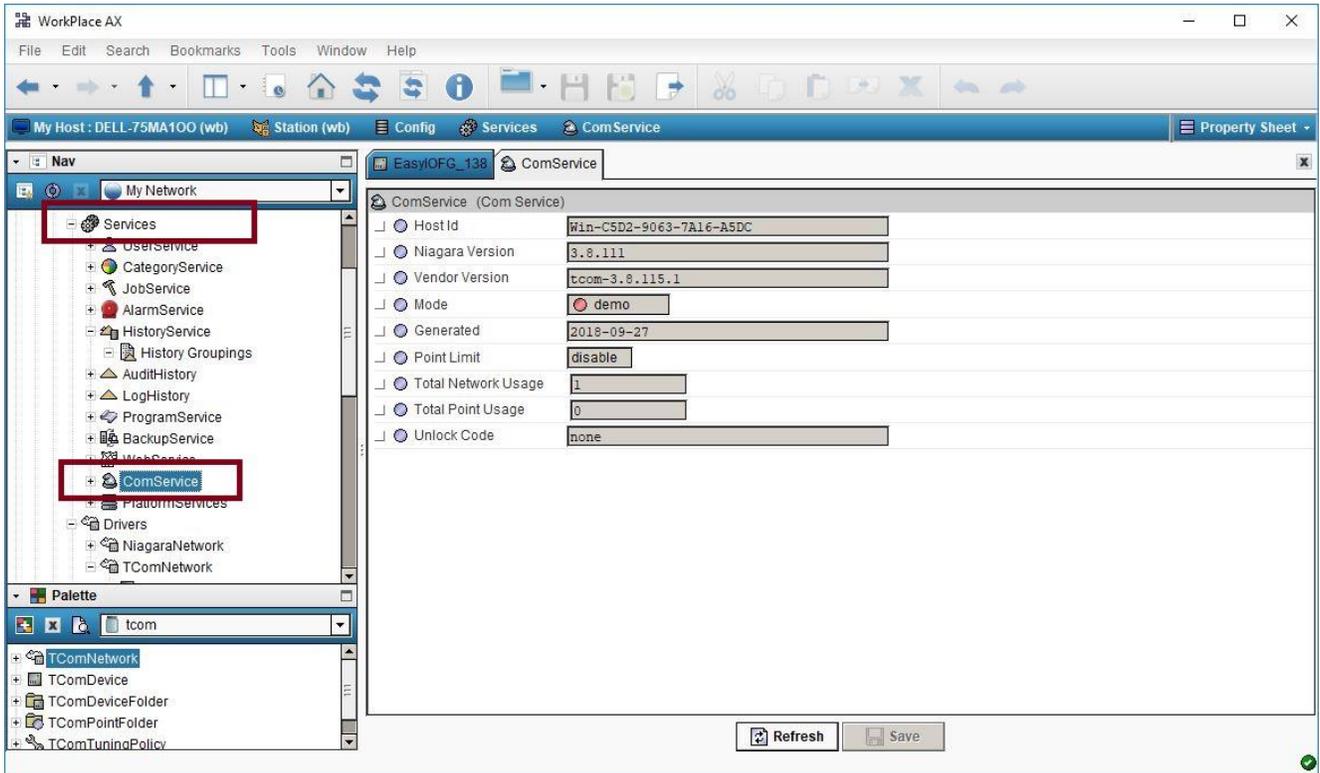
## Licensing

TCom driver License is running independently from the Tridium license, it has no restriction to run to any of the existing license vendor.

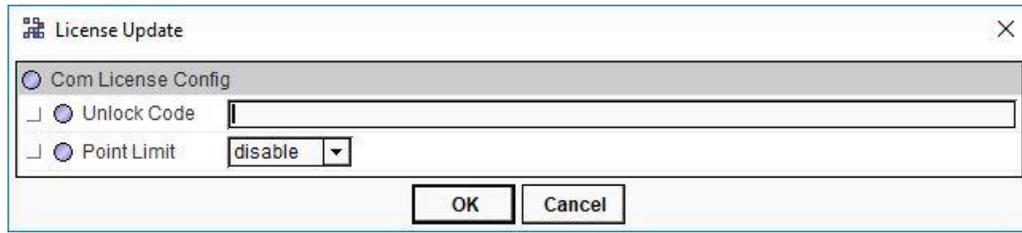
The TCom license provide 2 hour demo license without the signature code. After the demo license expired the TCom Driver communication will stop automatically and will show fatal fault at the TCom Network level. "TCom license expired". To extend the demo period user required to restart the station.

To request the license please submit the JACE/Web Supervisor host ID, to unlock the driver simply go to the service container, and look for "ComService", select the word "ComService" and click right mouse button, action and invoke command "License Update", the dialog "License Update" will appear as below. Place the signature code at the "Unlock Code" property and select the point Count (if applicable) property. Please take note the license only provide by authorize vendor. If the signature code is successful enter the property "Mode" will automatically change to "registered" and user is required to reboot the JACE to apply the change.

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\*\*\*End\*\*\*