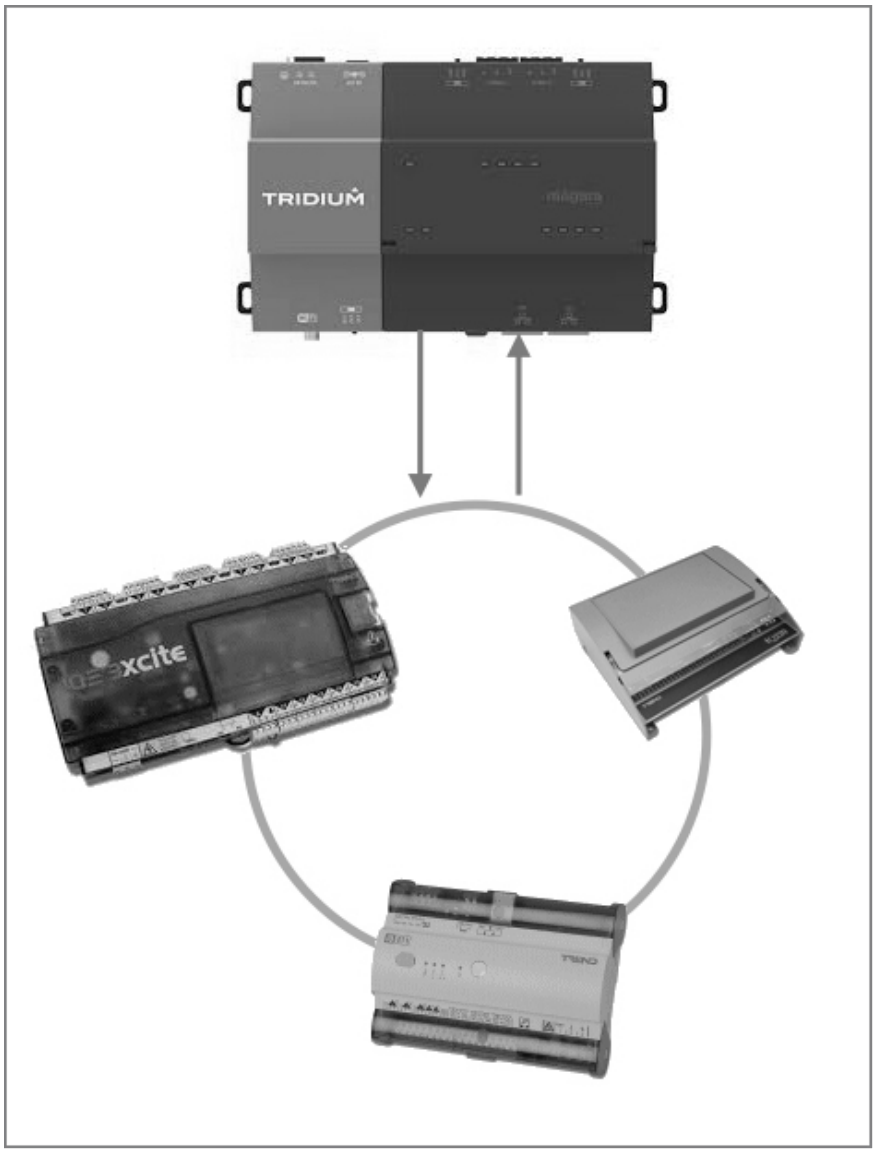


Trend IP Integration Driver for Niagara 4

Prepared by: Rob Heathcock, Technical Director

Date: 20 January 2022

Revision 1.9

INTRODUCTION

The Trend IP integration driver is designed to provide an easy interface to a Trend Building Management System.

The driver packs come with a point pack (number of points, for example 100 points) and one VCNC connection. Each VCNC connection is restricted to the LAN that it belongs to (i.e. LAN11), meaning only controllers from LAN11 are discoverable. If multiple LAN connections are required then an additional VCNC connections will be required - one VCNC connection per LAN. The overall point pack can then be shared across the Trend Driver Networks.

The Trend driver fully supports time schedules (read & write) and alarm receiving, these are additional, licensable features that are not included as part of the standard point packs. For more information please see the Licensing section.

The driver full supports the following ranges of controllers -

- IQ7x Series
- IQ9x Series
- IQ1xx Series
- IQ2xx Series
- IQ3xx Series
- IQ4xx Series
- IQeco
- *IQL**

**Note:* IQL connections are supported but require a specific configuration. Please contact technical support for further information.

Traditional current loop controllers should be connected via a VCNC (EINC / IQ4NC etc). However on a current loop only installation we can provide an IP > Serial converter that will allow a serial supervisor port (RS232) to be used as a VCNC connection to the connected local LAN.

PART CODE	DESCRIPTION
TD01232IP	Serial Device Server - Ethernet to RS232 Adapter

In the current release of the driver the following controllers are not supported -

- *IQ4xx Series using secure VCNC connections**

Support for this range of controller will be added in a future release of the driver.

DRIVER INSTALLATION

The Trend driver supports Niagara 4.10 and above.

NOTE:
If your installation is running an an older version of software then it must be upgraded to meet the above requirements to run this driver.

Any future updates to the Trend driver will be available for the current release of Niagara (N4.10 as of the current release) and previous release (N4.9 as of the current release). All other releases will become legacy and unsupported.

AX Installation:
Support for Niagara AX has now ceased. This product becomes fully unsupported in June 2021.

Niagara 4 Installation:
You will need the version specific JAR files for your specific Niagara 4 installation.

To install the driver copy the *tyrrellTrendIp-rt.jar & tyrrellTrendIp-wb.jar* to the following directory -

c:\niagara\niagara 4.x.xx\modules

Once the files have been put into the correct directory close your workbench, reinstall the platform daemon for your version of niagara and relaunch the workbench.

The driver is now ready to use in a local station or to commission / update a JACE.

To install the driver on a JACE use the software manager on the platform of the target device.

Niagara 4 Software Signing Certificates:
Niagara 4.9 onwards introduced a new security measure in that Tridium require all 3rd party drivers to be securely signed with a certificate. The Tyrrell code signing certificate is embedded within the JAR file and verified through an approved certificate authority (CA) within the Niagara framework. This means that you do not have to manually install any additional code signing certificates.

LICENSING

The driver has several license options available -

PART CODE	DESCRIPTION
UD00101A	Trend IP 100 Point Pack / 1 VCNC
UD00101B	Trend IP 250 Point Pack / 1 VCNC
UD00101C	Trend IP 500 Point Pack / 1 VCNC
UD00101D	Trend IP 1000 Point Pack / 1 VCNC
UD00101E	Trend IP 2000 Point Pack / 1 VCNC
UD00201CON	Additional Virtual CNC (For Multi LAN Configurations)
UD00301A	Tridium Schedule to 1 Trend Time Zone
UD00301B	Tridium Schedule to 2 Trend Time Zone
UD00301C	Tridium Schedule to 5 Trend Time Zone
UD00301D	Tridium Schedule to 10 Trend Time Zone
UD00301E	Tridium Schedule to 25 Trend Time Zone
UD00301F	Tridium Schedule to 50 Trend Time Zone
UD00301G	Tridium Schedule to 100 Trend Time Zone
UD00401A / UD00401G	Trend Alarm Recipient Pack (1 x IQ / 100 x IQ Alarms)
	Alarm Pack Breaks = 1 / 2 / 5 / 10 / 25 / 50 / 100

The standard point pack comes with 1 x VCNC connection. When a VCNC is bound to the Driver Network it locks the driver to the LAN that the VCNC belongs to (i.e. LAN11). No Outstation(s) from any other LAN will be discoverable.

If you wish to add Outstations from multiple LANs then an additional VCNC license will be required. A second Trend IP driver can then be loaded and locked to a different VCNC on the target LAN (i.e. LAN12). The point pack will be shared across the two drivers.

SOFTWARE MAINTENANCE

The Trend driver includes a software maintenance feature. Every new purchase of the driver will support the current release of Niagara 4 and the next release of Niagara 4, any subsequent upgrade will require a software maintenance license to be applied.

As an example the current release of Niagara 4 is N4.10, a new driver purchase will cover you for N4.10 and an upgrade to N4.11 (also any previous release of the software - note we only support the current release and previous release with driver updates). Any further upgrades, for example to N4.12 or above, will require a software maintenance to be applied. The software maintenance would then cover you for the now current release and the next release of the software. You can upgrade from any previous release with a single software maintenance purchase.

If you purchased a historic release of the driver then a software maintenance license will be required for any upgrades including and above Niagara 4.9.

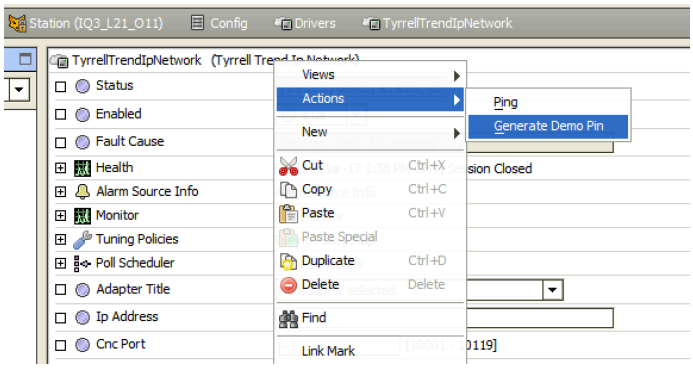
Any questions or queries in relation to this item should be sent to sales@tyrrellproducts.com

DEMO MODE

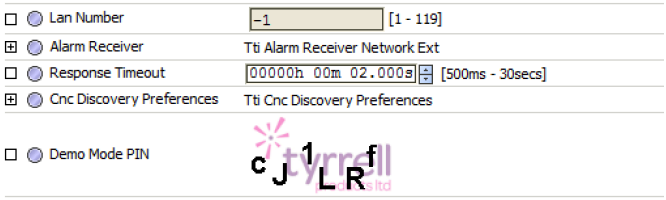
In addition to permanent licenses the driver also supports a two hour demonstration mode.

To activate this mode follow the below steps -

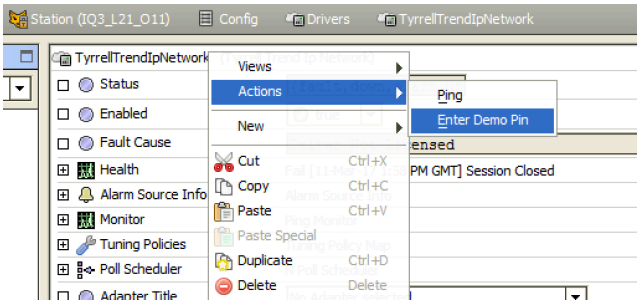
- Insert a new Tyrrell Trend IP network (see the following section)
- Go into the property sheet of the network
- Right click on the ***Driver > Actions > Generate Demo PIN***



- An image will appear at the bottom of the property sheet with a demo PIN



- Right click on the ***Driver > Actions > Enter Demo PIN***



- Enter the PIN exactly as it is shown in the image
- When entered correctly a pop up box will appear with instructions.
- Restart the station to complete the activation of the demo mode.
- After two hours the demo mode will expire, repeat the above steps to re-activate the demo mode.

STARTING THE DRIVER

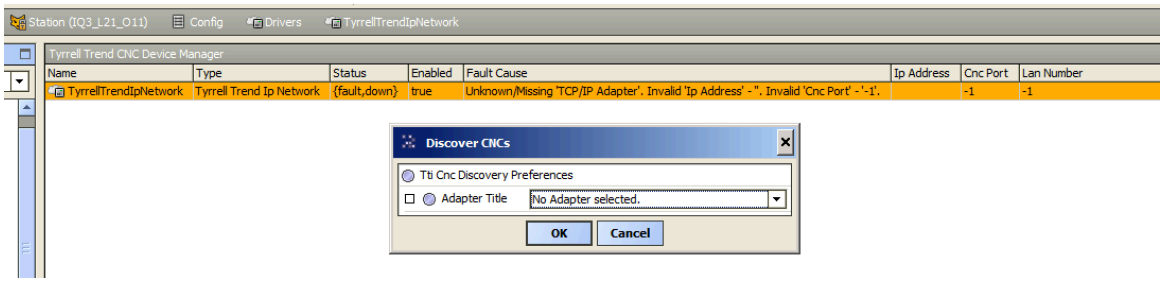
To stat the driver for the fist time -

- Connect to a running station and navigate to **Config > Drivers**
- Select **New Driver** or **Right Click** > **New Driver**
- From the drop down list select **Tyrrell Trend IP**
- You can rename this network to something more appropriate
- The driver is now ready for configuration

VIRTUAL CNC DISCOVERY

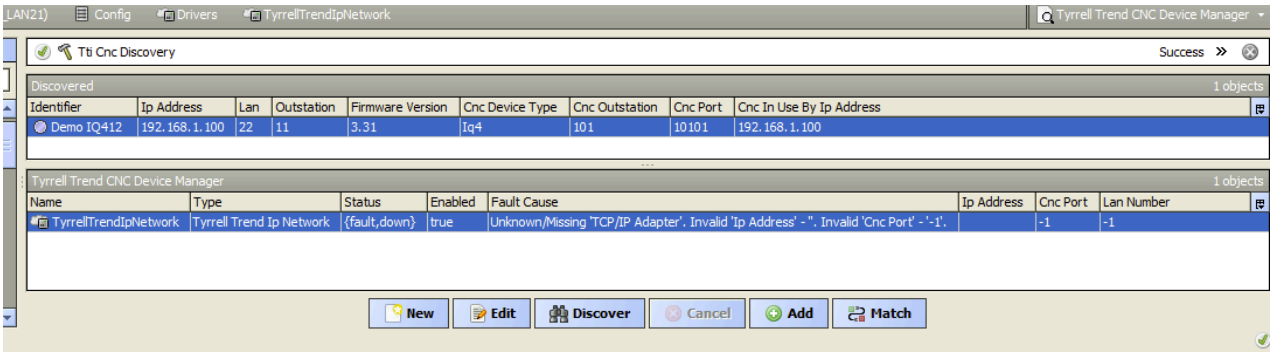
Double click on the Tyrrell Trend IP Network, the first time the driver is ran it will default to the CNC Device Manager window.

Press the **Discover** button and you will be prompted to select the ethernet adaptor to use -



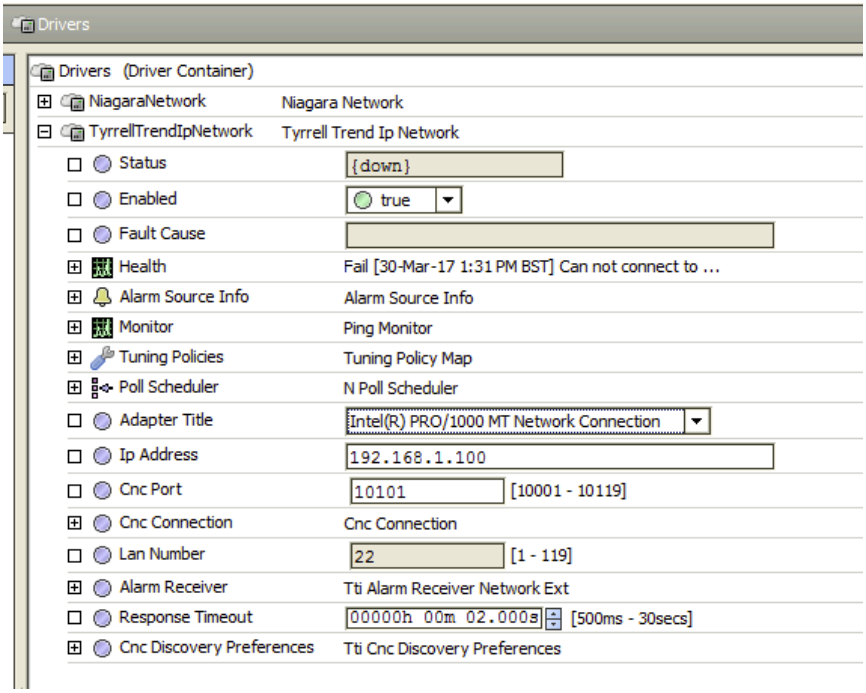
The driver will then send a broadcast discovery message to find all VCNCs on the network. Once discovery has completed the results will be displayed in the top half of the window.

The user should then select the VCNC they wish to use, select the driver in the bottom half of the window and press the **Match** button.



NOTE: The Tyrrell Trend IP network will be locked to the LAN of the VCNC that it is bound to. If a multi LAN installation is required an additional VCNC license will be required. A second copy Tyrell Trend IP network can then be loaded and linked to a VCNC on the second LAN.

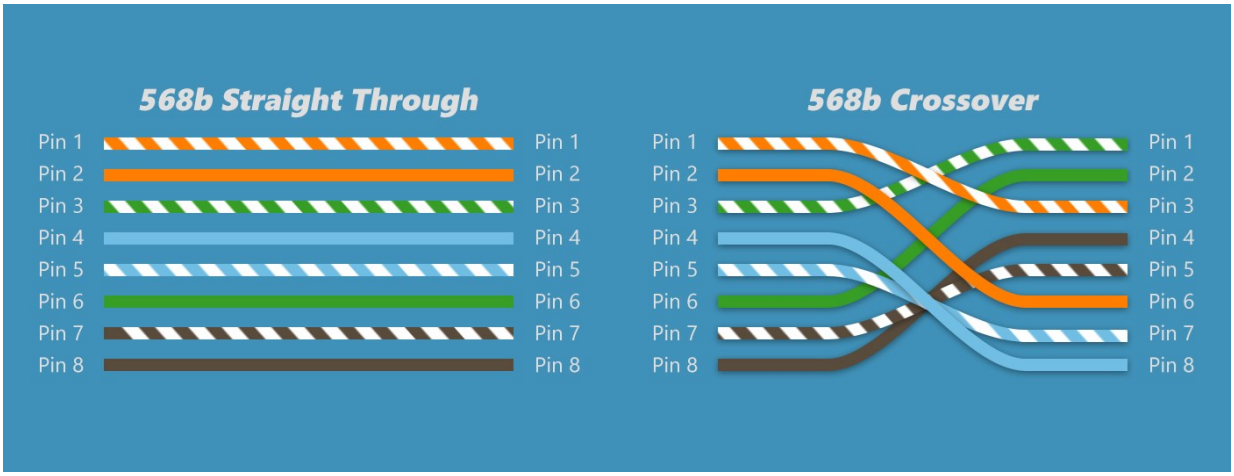
If for any reason the discovery process is not available (wide area networks or managed switches the VCNC settings can be configured manually via the Property Sheet.



- Select the **Network Adapter** to be used.
- Enter the **IP Address** or a **Host Name**.
- Enter the **CNC Port** value to be used.

Legacy Trend equipment (IQ3 / EINC etc) should not be directly connected to a LAN port of a JACE8000 with a regular patch lead, a specific crossover lead pin out would be required. It is recommended to connect a basic IP switch between the JACE and Trend equipment.

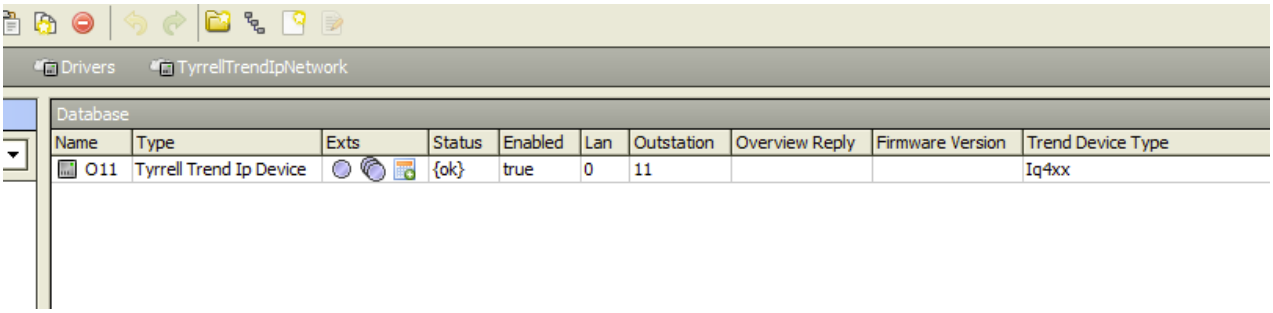
Lead Configurations:



TREND IQ DISCOVERY

Once the VCNC is configured double click on the driver and this will bring up the IQ Device manager window.

Press the discover button to do a discover of all Outstations on the local LAN. NOTE: The driver will only discover outstations on the same LAN as the VCNC that the driver is connecting with. If you require a multi-LAN configuration then additional license features will be required (i.e. additional VCNC connections).



The IQ devices support the following extensions -

- Points
- Schedules (Import & Export)
- Alarms (Requires configuration in the Outstations)

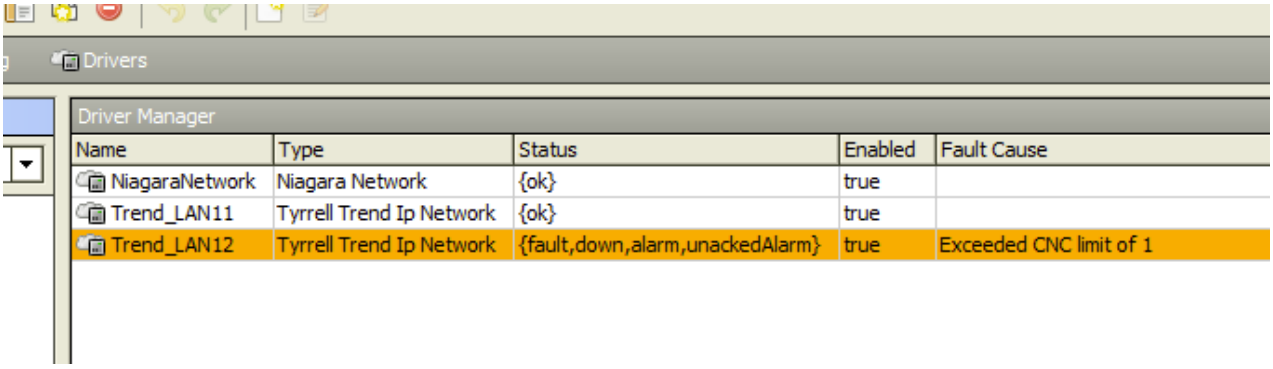
NOTE: IQ controllers may also require a PIN number to be entered to support writing of parameters such as Knobs & Switches. If the IQ using PIN security and a PIN is not entered, or entered incorrectly then the point may be forced into fault when attempting to write a value (the point will receive a NAK response from the target IQ). Once the PIN has been entered correctly the point will come out of fault when a successful write is completed.

MULTI LAN INTEGRATION

All of the standard point packs come with a single VCNC connection. When a VCNC is linked to TyrrellTrendIPNetwork the driver is only capable of discovering Outstations on the same LAN.

If a multi LAN configuration is required then an additional VCNC license feature is required. When there are two or more additional VCNC licenses available then a second TyrrellTrendIPNetwork should be loaded and the VCNC discovery process repeated. The new VCNC connection should belong to a VCNC on the second LAN -

TyrrellTrendIPNetwork_LAN11	10101 (LAN11)
TyrrellTrendIPNetwork_LAN12	10102 (LAN12)

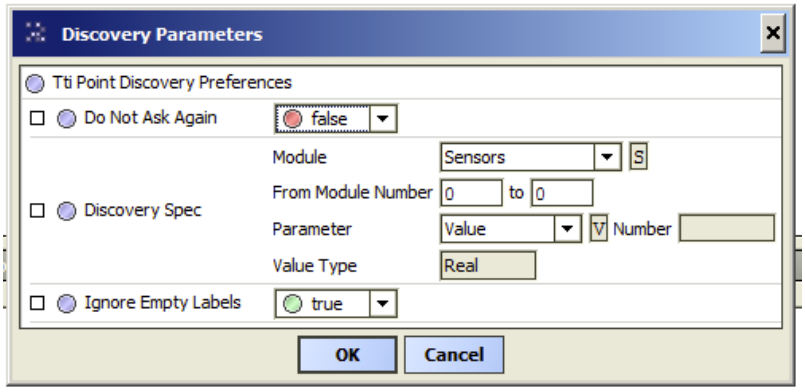


If a license feature is not available then the new network will report this as a fault.

There is no limit to the amount of networks that can added, provided there are VCNC license features available and a suitably sized point pack.

POINT DISCOVERY

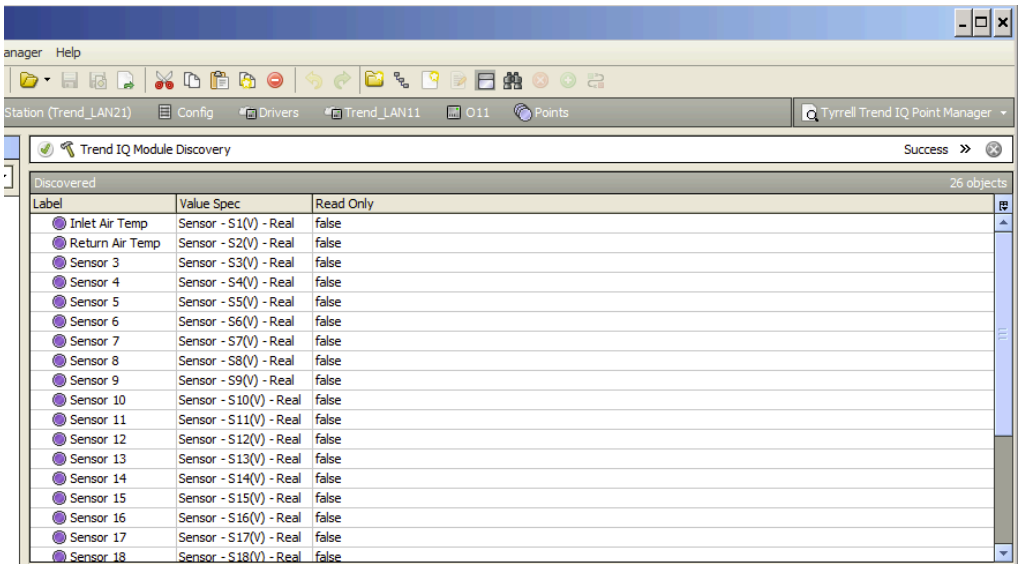
Navigate into the Trend Network and the Outstation. The user can then press the **Discover** button, this will then open a new window prompting for discovery options -



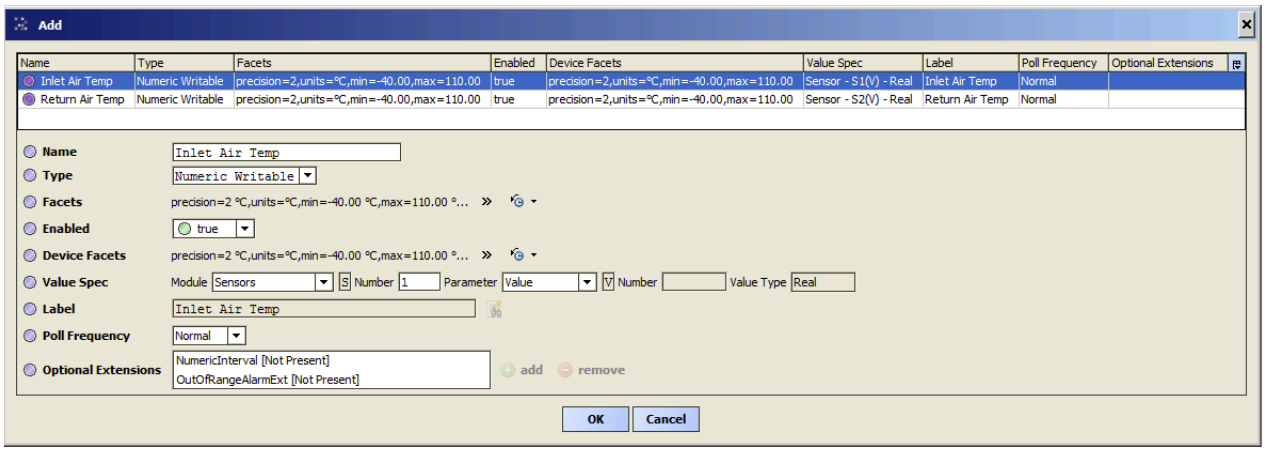
The user can select several options -

Module	Sensors / Digital Inputs / Drivers / Analogue Nodes / Digital Bytes / Knobs / Switches / Loops / Other (any other component)
From Module Number	Fix the range of discovery (leave at 0 for auto discovery)
Parameter	Value / Units / Low Alarm / High Alarm / Offset / Input Type / Other (any other parameter)
Ignore Empty Labels	This option will not present any components with a blank or empty labels (e.g. $ = “”)

In this example the Sensors will be discovered -

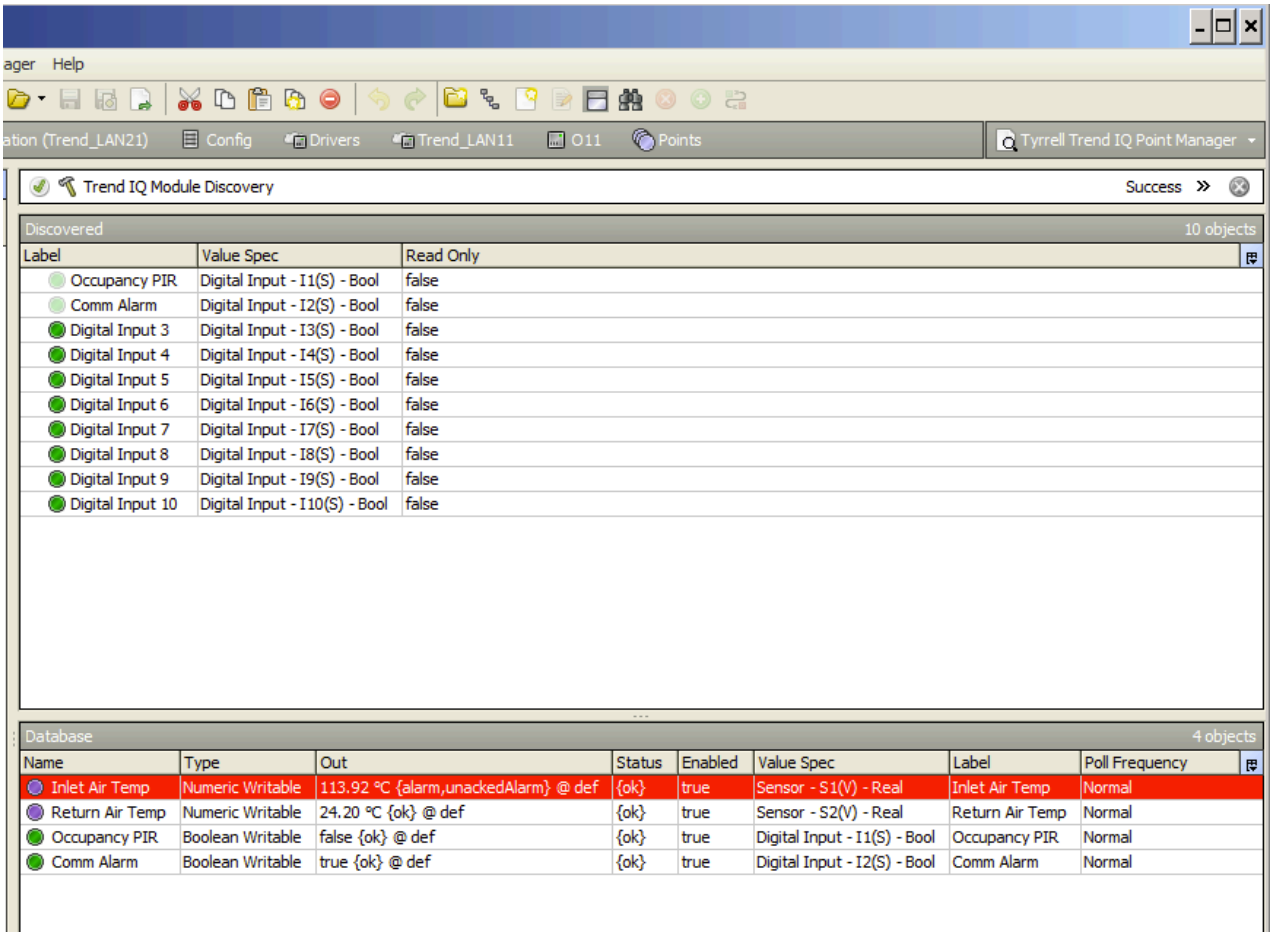


The user can then select the Sensors they want to add to the Station Database and press the **Add** button.



The user can then adjust the points configuration -

Name	Adjust the point name
Type	Adjust the point type (read or write)
Facets	The Facet will automatically inherit from the Trend Units where available, otherwise a manual Facet can be set
Optional Extensions	History and / or Alarm extensions can be automatically added to the point



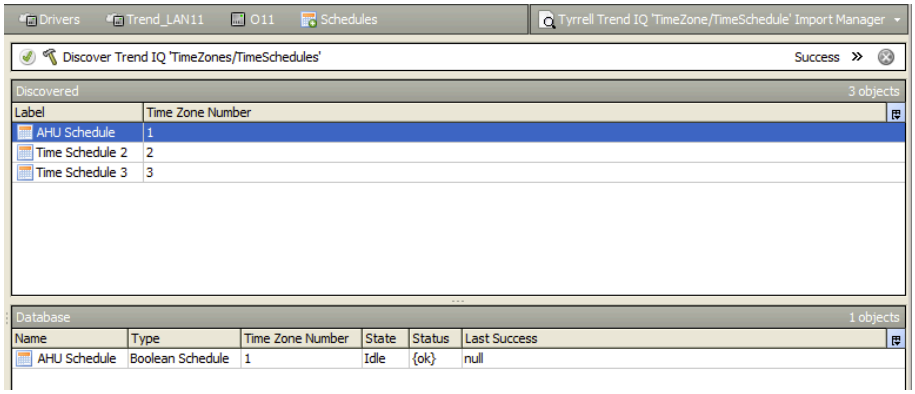
If preferable folders can be created for each module type (Sensors, Inputs, Drivers etc).

SCHEDULE IMPORT

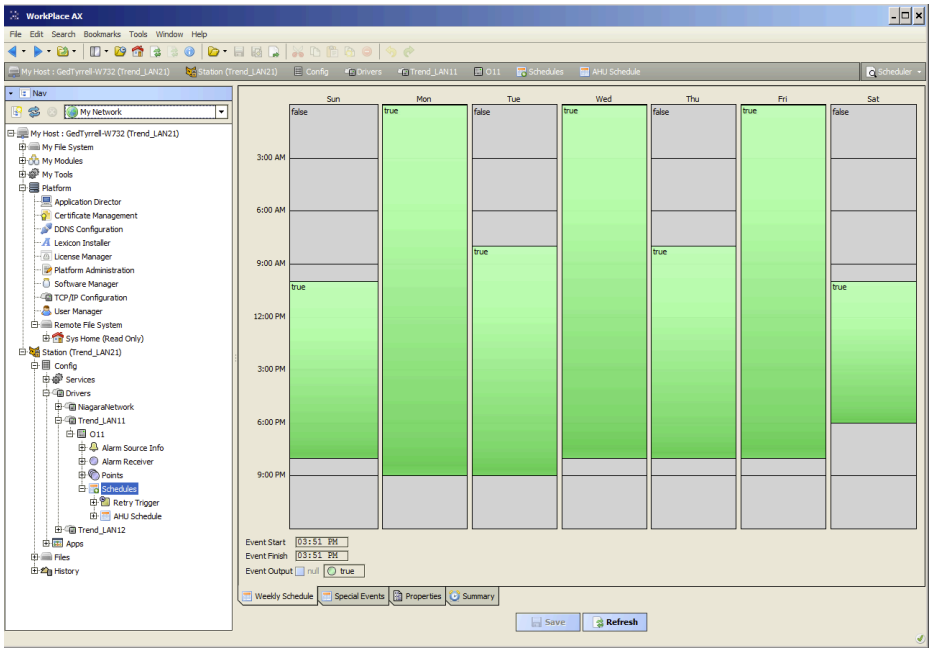
The default view of the Schedule extension is the **IMPORT** view. Any schedules added via the import will be READ ONLY. If you want to control Trend Time Zones then the **EXPORT** view should be used.

NOTE: Schedule Exports are an additional license feature.

Within the Schedule Import view press the Discover button and add the required schedules to the station -



The imported schedule will be read only. This is useful for learning the existing schedule and confirming schedule within the IQ matches the local Tridium time schedule.

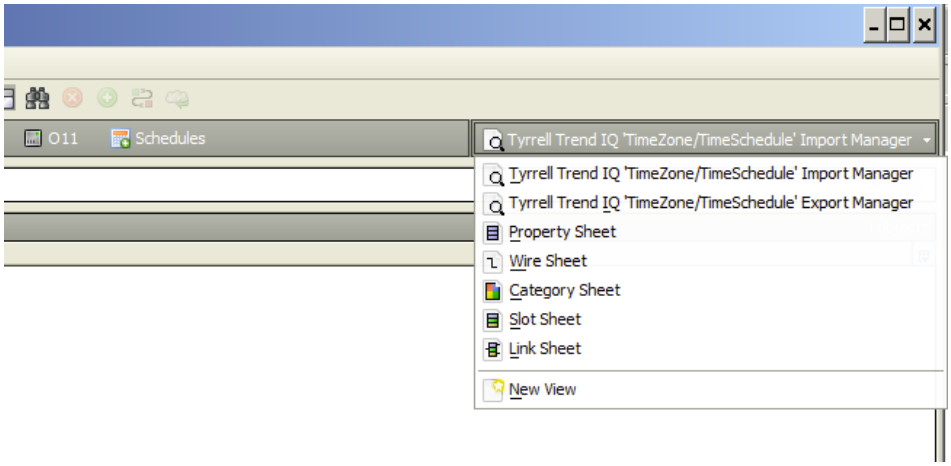


By default the schedules will re-import every 15 minutes. This can be adjusted by editing the Retry Trigger component under the Schedules Extension in the Nav Tree.

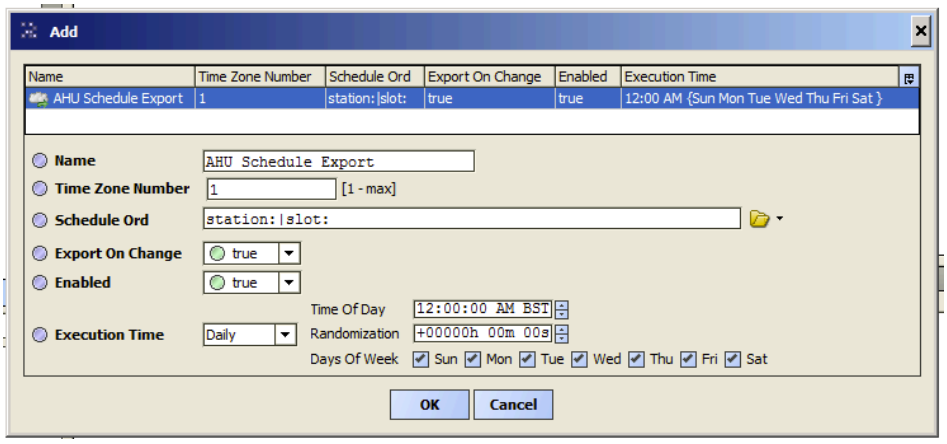
SCHEDULE EXPORT

NOTE: Schedule Exports are an additional license feature.

To navigate to the export view select the **Schedule Export Manager** view



Again do a discover for all of the Trend Time Zones in the selected IQ and add the required schedule(s). A configuration window will then appear -



Name	Name of the Schedule
Zone Number	Trend Time Zone Number
Schedule ORD	Target Tridium Schedule that will be exported
Export On Change	Should the Tridium Schedule automatically export on a state of change
Execution Time	Time of day the schedule should re-synchronise (e.g. daily at midnight)

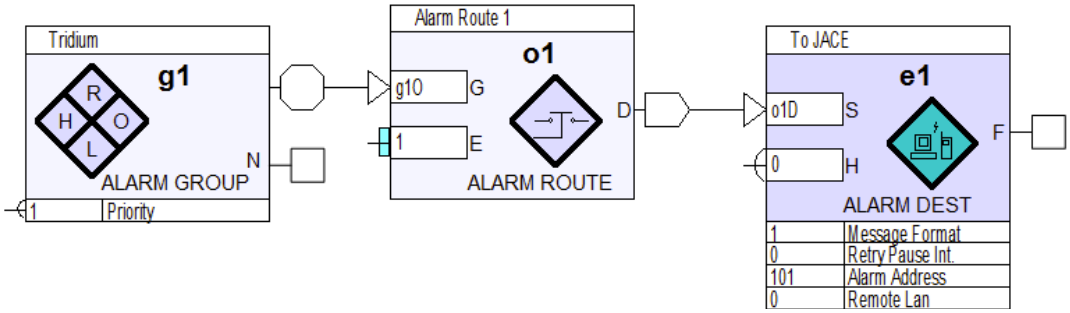
ALARMS

NOTE: The receipt of alarms from the Trend LAN is an additional license feature.

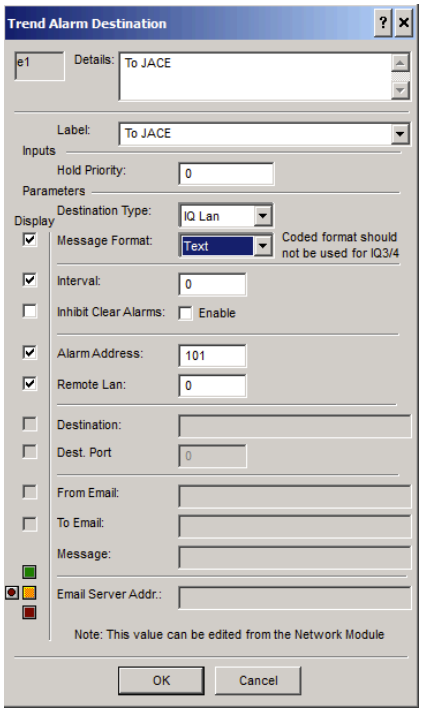
This feature is based on the number of Outstations permitted to transmit alarms to the driver. For example, if the LAN has 15 x IQ3 and the driver is only licensed for 10 x Trend Device Alarms, the driver will only accept alarms from the first ten outstations that transmit an alarm (in any order - IQ11/12/13/14/19/15/18/17 etc).

The driver will generate an alert alarm if it receives an alarm from an Outstation that exceeds the license capacity. This will notify the user that alarms are being received but the alarm licence capacity has been exceeded.

The Trend Outstations must be configured to deliver alarms to the VCNC that the Trend Driver is connected to. Below is an example -



The Trend Alarm Destination also requires some configuration -

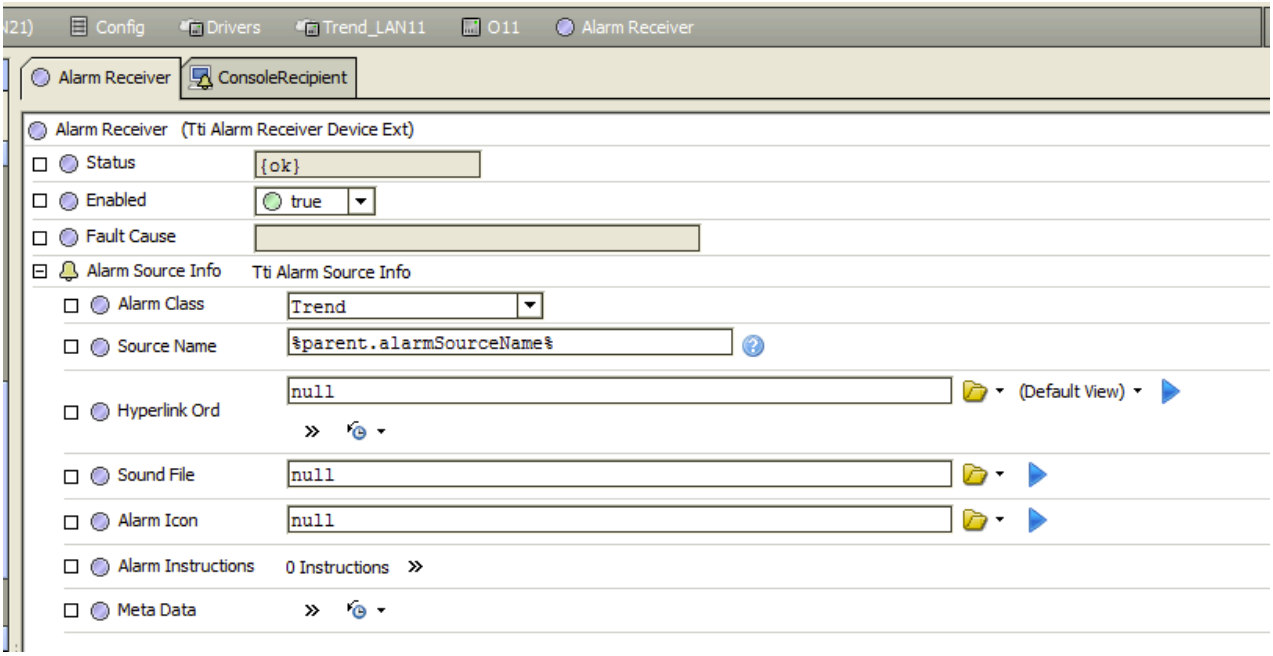


Destination Type	IQ LAN
Message Format	Text
Address	101 (VCNC the Driver connects to)
Remote LAN	0 (Local LAN)

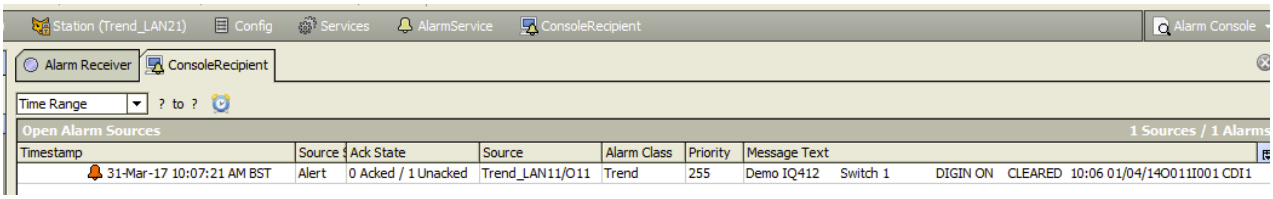
The Trend is now configured and the Tridium end requires some configuration.

The JACE / WebSupervisor requires an appropriately named **Alarm Class** (i.e Trend LAN11).

The alarm receiver of the Outstation in the driver then needs to be configured to deliver alarms to the required **Alarm Class** -



Any alarms that are generated by the Trend IQ will now be visible in the Alarm Console -



When an alarm is delivered to the Driver an acknowledge message is immediately sent back to the IQ that raised the alarm. The ack message does not occur when the alarm is Acknowledge in the Alarm Console.

REVISION HISTORY

REVISION	DESCRIPTION
1.0	Release Candidate
1.1	Alarm acknowledge info added when using Trend Alarms
1.2	Host Names now supported with driver v4.6.96.28.0.12
1.3	Introduction section added Supported / unsupported controller details added General update in line with driver v4.7.109.20.0.15 Misc formatting updates
1.4	IQL Controllers are supported but require a special configuration
1.5	Direct Connections to IQ3 via Crossover Cable Added
1.6	Niagara 4.9 Certificate Details Added
1.7	Software Maintenance Details Added
1.8	Niagara 4.10 Release
1.9	Code Signing Certificate Updated