Microsmart TCP Driver User Guide

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Chapter 1

Installation

Install ibmsMsTCP-rt.jar and ibmsMsTCP-wb.jar on the computer where Niagara N4 Workbench will run. To install, place a copy of the file in the modules directory of your Niagara N4 installation. This is typically C:\Niagara\Niagara-4.0.nnn\modules.

Install ibmsMsTCP module on the target station. Using a Niagara N4 workbench where the module has already been installed, connect to the stations platform service. Go to the software manager and install ibmsMsTCP.

Apart from installing the 3.*n.nn* version of the Niagara distribution files in the JACE, make sure to install the ***ibmsMsTCP*** module too (if not already present, or upgrade if an older revision). For more details, see "About the Commissioning Wizard" in the JACE Niagara N4 Install and Startup Guide.

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

Requirement

N4 workbench version

- N4 workbench 4.0.22.xx and higher.
- TCP Ethernet Port connection.
- N4 platform support:

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

Microsmart support controller

The Microsmart driver provides the components necessary to integrate Microsmart controllers. This document assumes that the reader has some familiarity with Robertshaw product..

The purpose of this guide is to help field experts integrate Microsmart controllers. This guide assumes that the reader has extensive knowledge about the Microsmart.

The Microsmart Driver supports the following directly connected products:

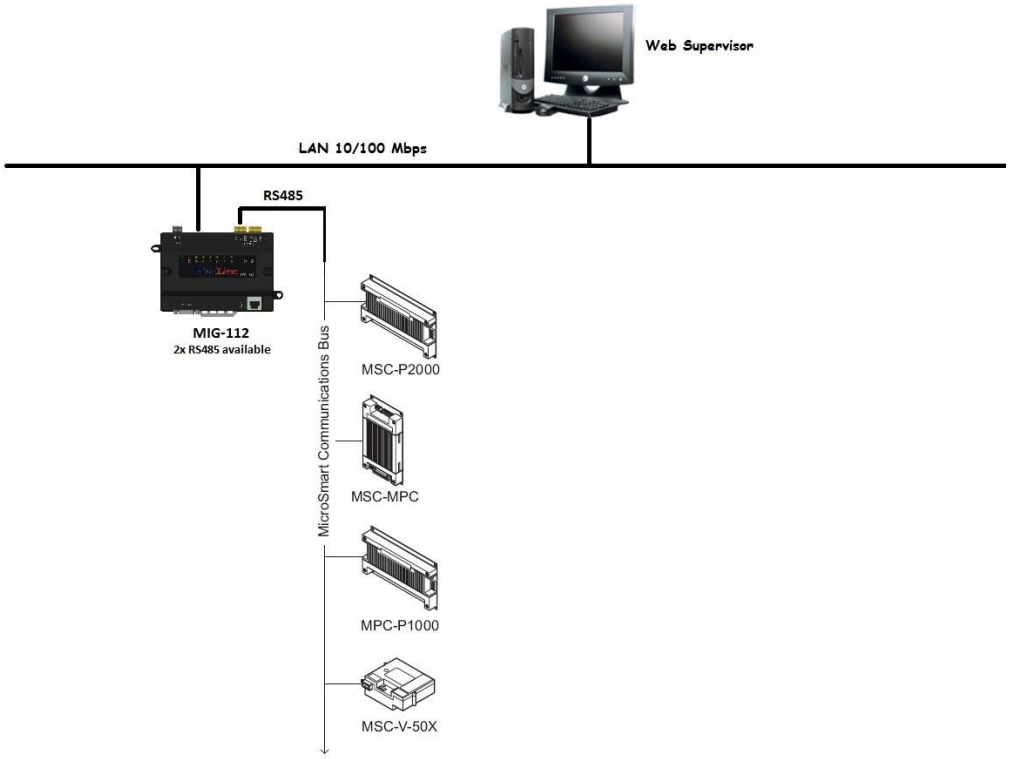
Part No	Description	Firmware Revision
MSC-MPC-001	L11 MPC	11.2H
MSC-P1501/1502/1503/1504	L11 Unit Controller	11.3A
MSC-L1000	Lighting Controller	11.2H
MSC-P-751/752/753/754	L11 Unit Controller	11.2H
MN-MSI	Micronet Integrator Microsmart	11.1T
MSC-V-751/752/753/754	L11 VAV Controller	11.2H
MSC-V-511/512/521/522	L11 VAV Controller	11.2H
MSC-MPC	L11 Multi Purpose Controller	10.3
MSC-U1000	L10 Enhanced Unit Controller	10.4C
MSC-P2000	L10 Enhanced Medium PUC	10.1
MSC-P1000	L10 Enhanced Low PUC	10.1
MSC-V50x	L10 VAV Terminal Controller	10.4D
MSC-GPC	L9 General Purpose Controller	9.4C
MSC-IOC	L9 Input/Output Controller	9.4C
MSC-P-100	L9 Low PUC	9.4C
MSC-P-200	L9 Medium PUC	9.4C
MSC-T-100	L9 Temperature Controller	9.4C
MSC-V-100/V110	L9 VAV Terminal Unit Controller	9.4C
MSC-V-200	L9 VAV Terminal Unit Controller	9.4C
MSC-UC	L9 Unit Controller	9.4C
MSC-V-300	L9 VAV Terminal Unit Controller	9.3

Note: The firmware revisions listed above were validated with this driver. Other versions may function correctly but were not tested. If difficulties are experience.

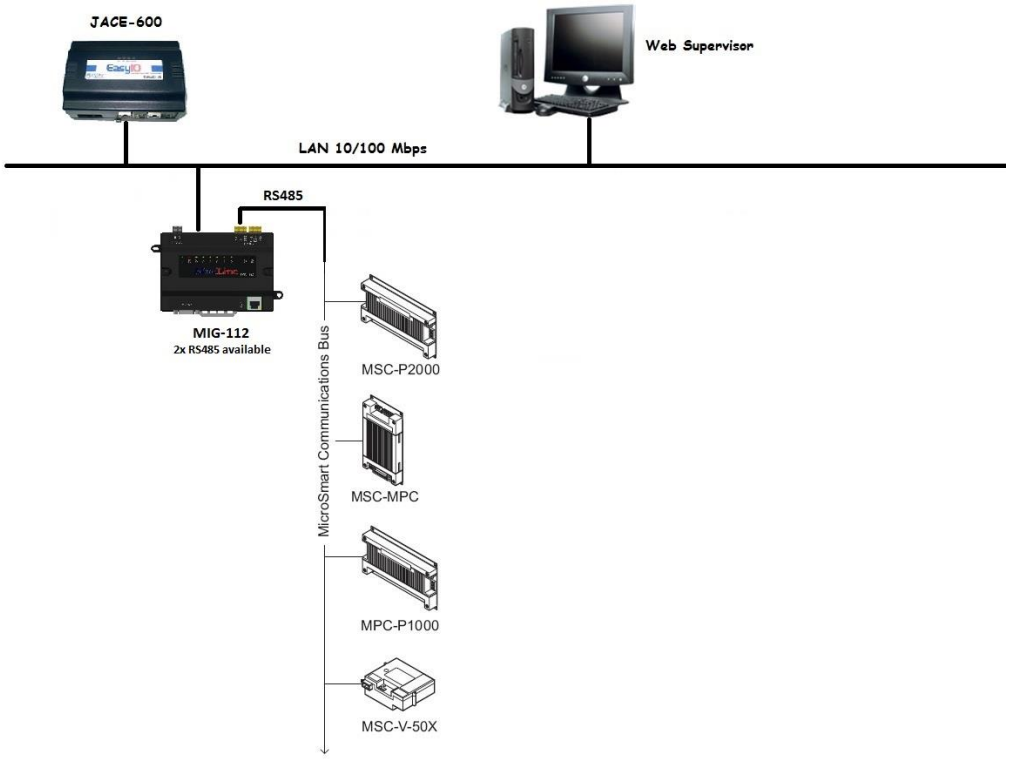
Connection network topology

Below is a figure Microsmart controller Network topology.

Options 1 - (Microsmart N4 driver will install at the Web Supervisor/Soft-JACE and communicate direct to the MIG-112 gateway controller).



Options 2 - (Microsmart N4 driver will install at the JACE and communicate to the MIG-112 gateway controller).



Note : Level 9 Microsmart controllers cannot be addressed above address 62. The Level 9 Microsmart controllers must reside on the first 62 addresses. They will not communicate above address 62. This is a Level 9 Microsmart device limitation. If more than 62 Level 9 Microsmart devices exist, break up the network into two trunks and use two Microsmart drivers and RS-485 trunks.

Note: It is acceptable to have a combination of up to 124 controllers on a single network but any controller above address 62 must be either Level 10 or Level 11.

Chapter 2

MIG-112 Configuration

This section provides a collection of procedures to configure the MIG-112 setting.

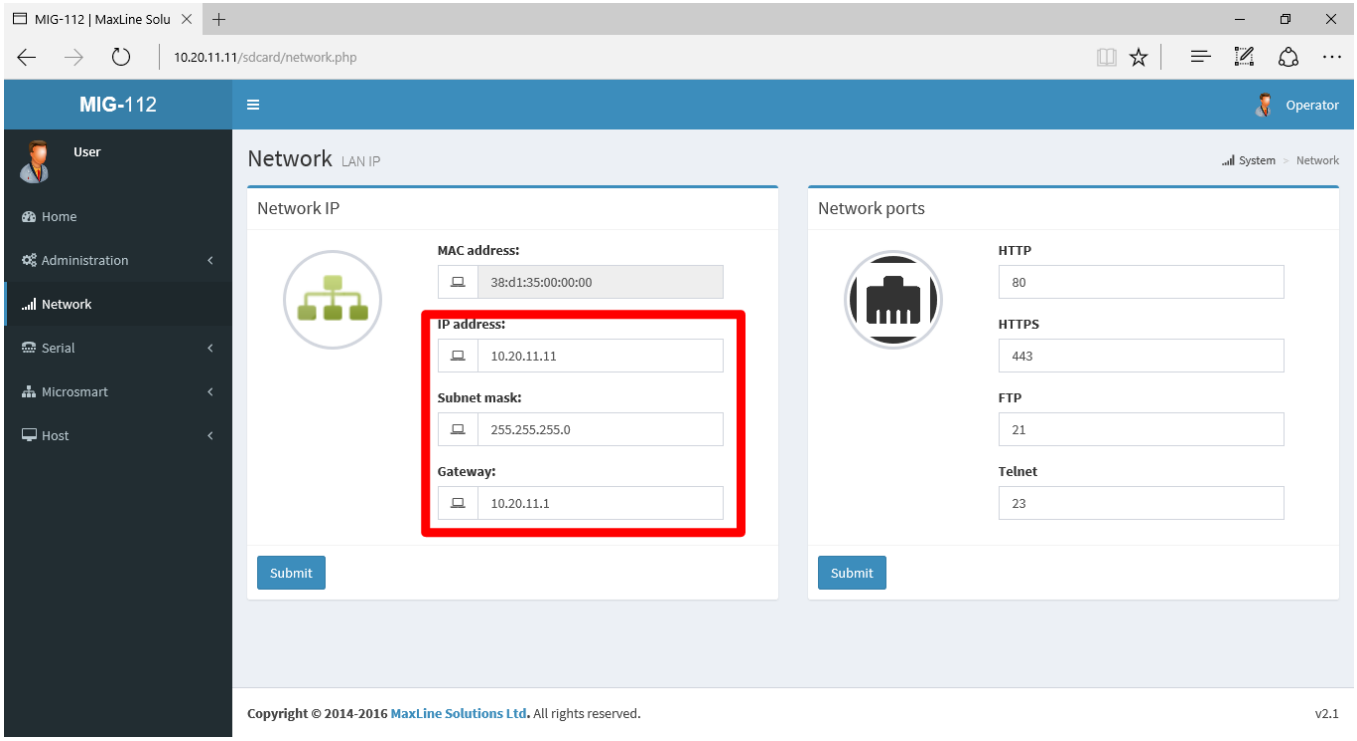
Default IP address

- By the default from the factory the IP address is "192.168.10.11".
- User may require to change the default IP address to suite the network requirement. To take effect the changes MIG-112 controller required to reboot.
- Run the web browser from the computer and key in the MIG-112 controller IP address with login the user name and password as below:-

  Address : http://192.168.10.11.
  User : user
  Password : pass

Change IP address

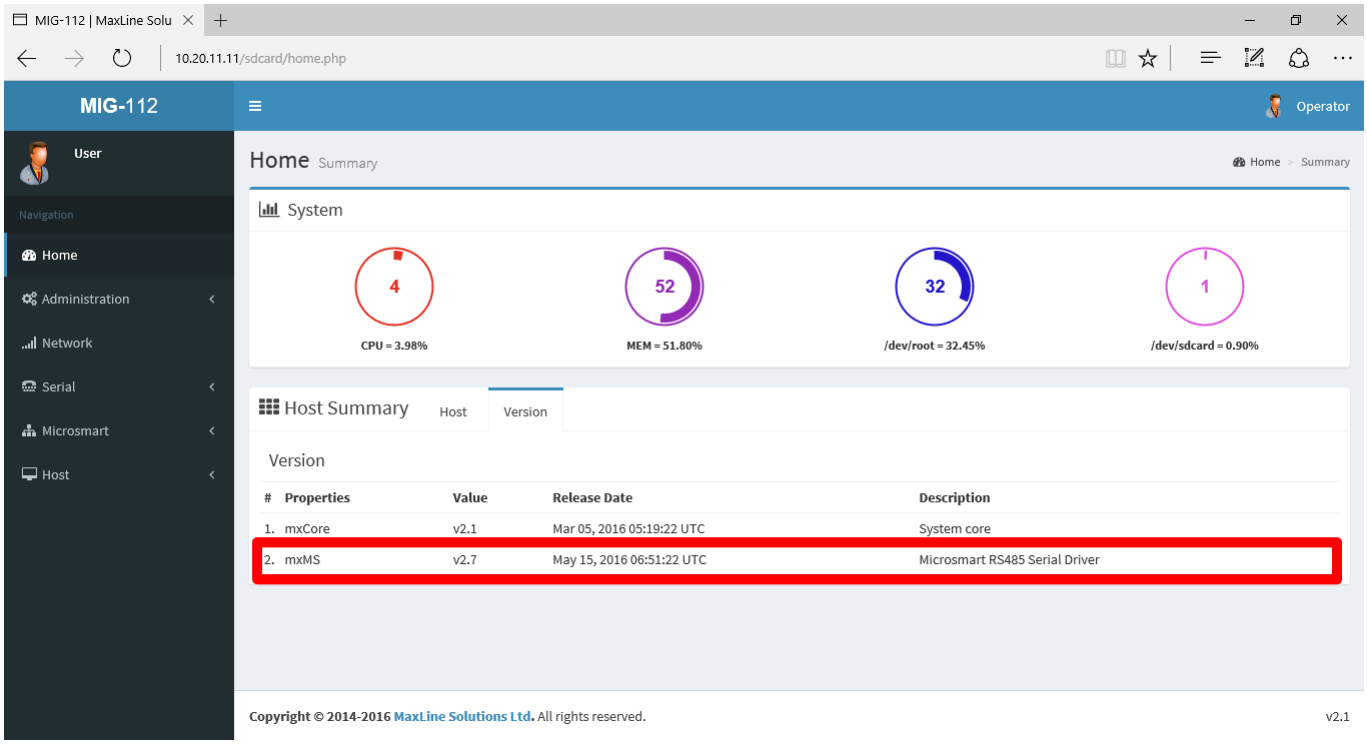
- After login to the MIG-112 web browser go to the "Network" tab, change the desire IP address and press the button "Submit". Finally reboot the MIG-112 to take effect.



Firmware verification

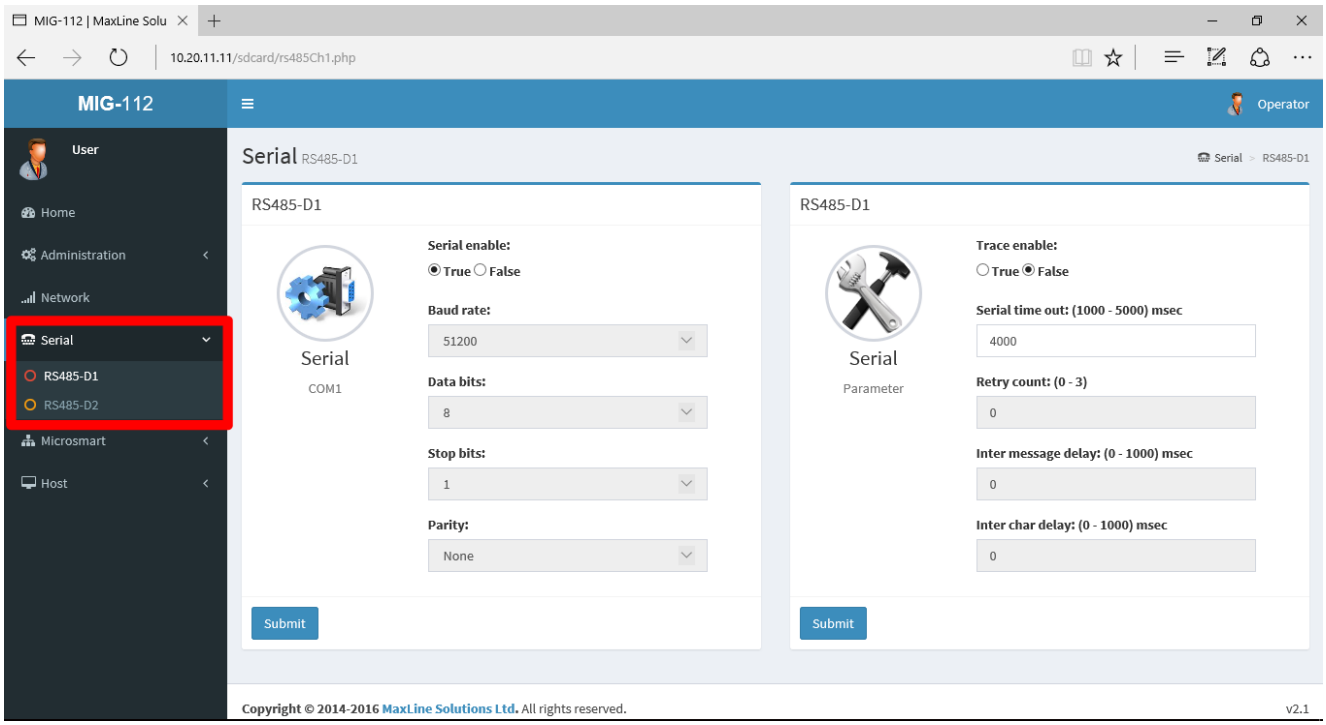
- Before integrate to the Microsmart system please make sure the MIG-112 has install the correct "apps driver", see the highlight as below "Microsmart TCP Gateway".

- Other than the "Microsmart TCP Gateway" the controller is required to update/install the correct firmware file.



RS485-D1/RS485-D2

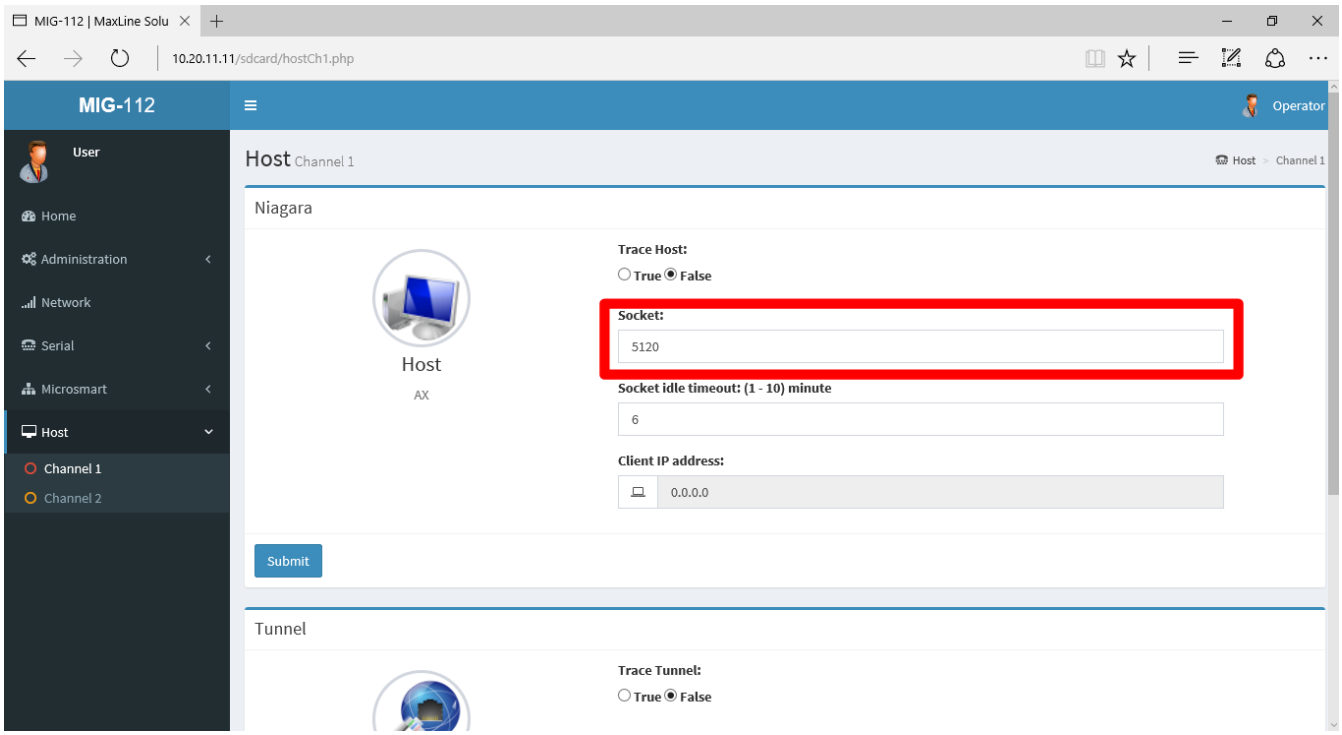
- Only MIG-112 controller has 2x RS485 port and the FG-20 is only 1x Rs485 port available and always connected to the RS485-D2.



N4 TCP Port mapping

- This information is part of the Niagara N4 integration software packet will transmit and receive from the specific RS485 port.

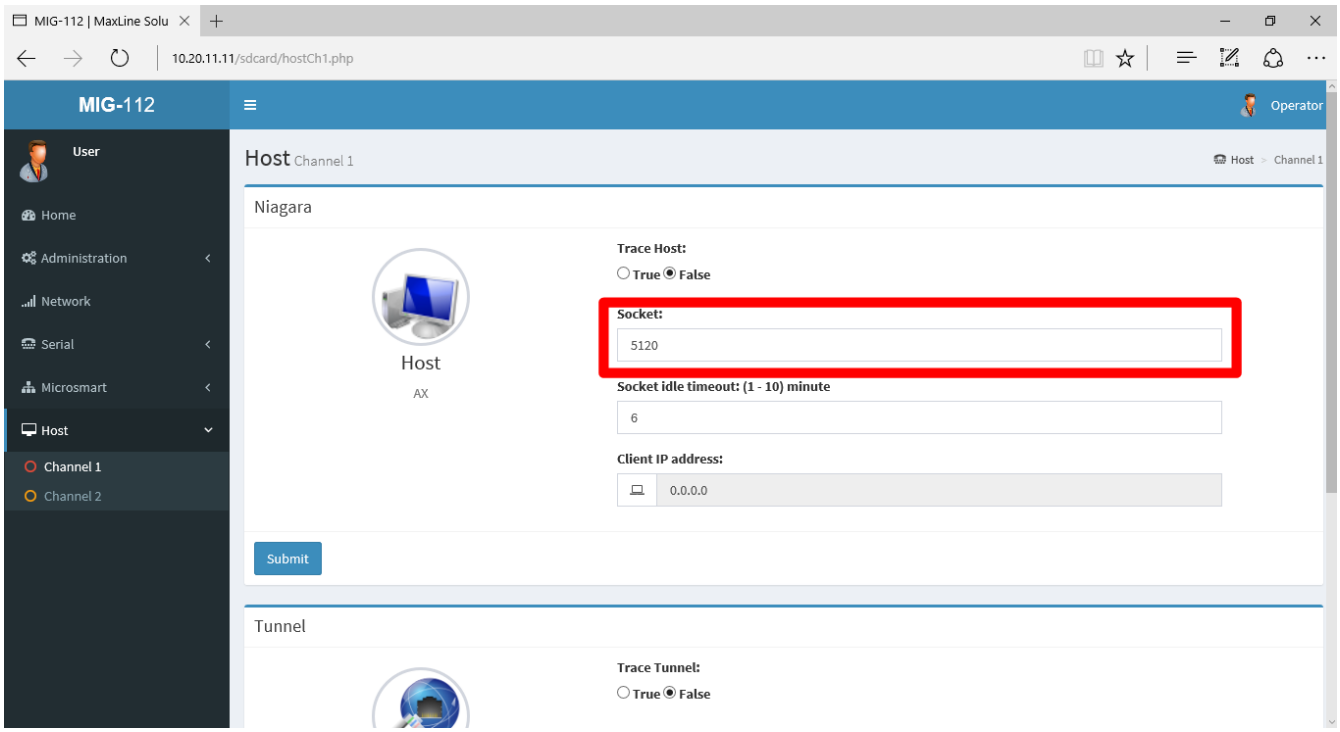
- MIG-112 controller
    - TCP Port 5120 = RS485-D1
    - TCP Port 5121 = RS485-D2



OPRIF/Tunnel TCP Port mapping

- This information is part of the OPRIF software packet will transmit and receive from the specific RS485 port.

- MIG-112 controller
    - TCP Port 6120 = RS485-D1
    - TCP Port 6121 = RS485-D2


MIG-112 | MaxLine Solu
10.20.11.11/sdcard/hostCh1.php
MIG-112
Operator
User
Home
Administration
Network
Serial
Microsmart
Host
Channel 1
Channel 2
Host Channel 1
Host > Channel 1
Niagara
Host
AX
Trace Host:
True False
Socket:
5120
Socket idle timeout: (1 - 10) minute
6
Client IP address:
0.0.0.0
Submit
Tunnel
Trace Tunnel:
True False

Chapter 3

Quick Start

- Follow the installation and configuration instructions preceding this.
- This driver is running with ethernet Port.
- Open the ibmsMsTCP palette and find the MsTCPNetwork object.
- Paste an MsTCPNetwork object under the driver's node in your station.
    - Edit the IP address properties as needed. By default the MIG-112 IP address is 192.168.10.11 and the Ethernet port is 5120.
    - If working with the MIG-112 controller model, there were 2x RS485 available, by default the IP address is 192.168.10.11 and the Ethernet port is 5120 for the RS485-D1 and 5121 for the RS485-D2.
    - If you have more than one MIG-112 controller add the MsTCPNetwork and fill the IP address with the correct TCP port.

Note : Only one(1) TCP connection port available for the gateway controller. Multiple MsTCPNetwork connect to the same TCP port e.g. 5120 will not work.

- Open the MsTCPDeviceManager view by double-clicking the MsTCPNetwork object just added to the station.
    - Add the Microsmart device and setup the address or user use discover device option.
- Once a device is added, navigate to the "points" folder under the device and double click the point's folder to display the MsPointManager view.
    - Press the "Discover" button.
    - Select and add Microsmart points to your database.

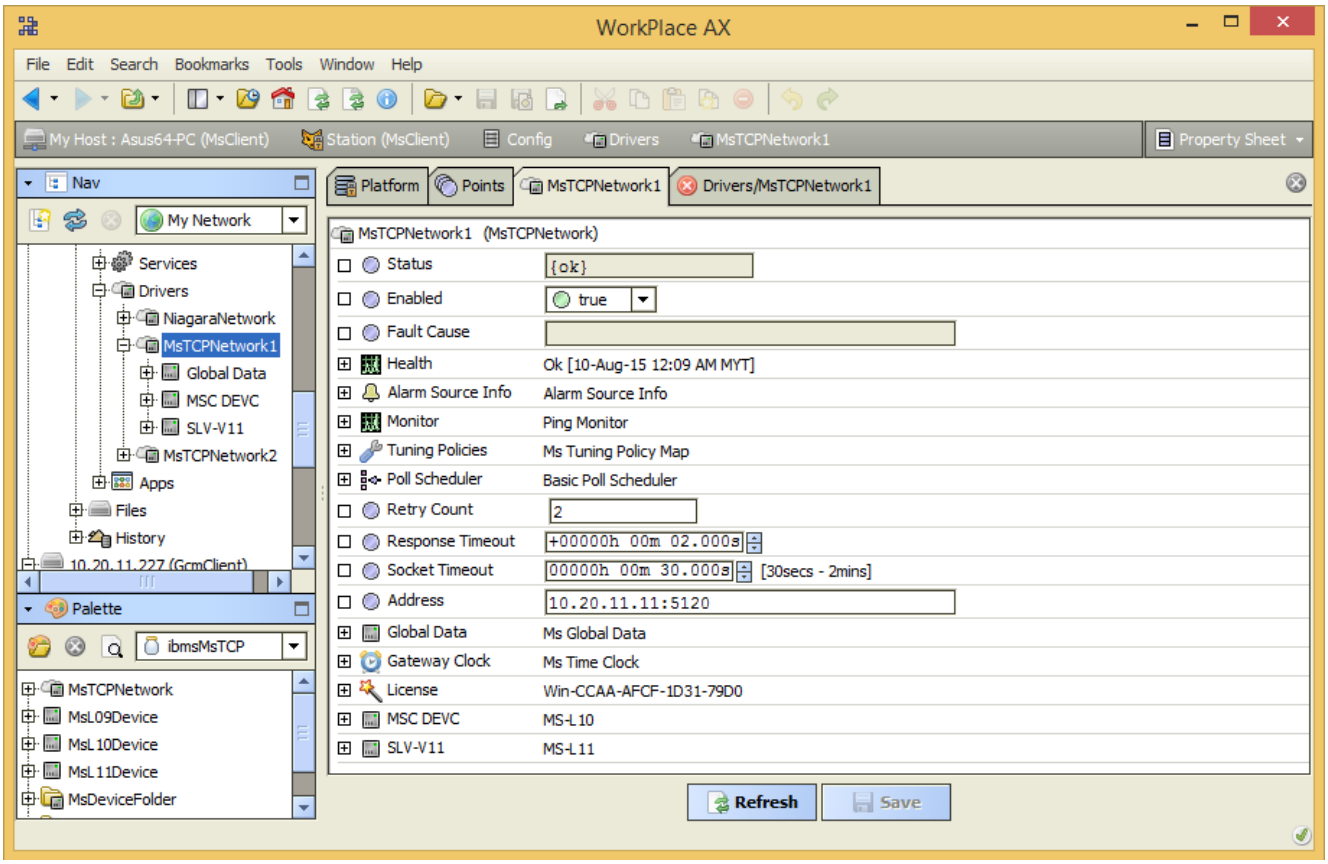
Microsmart Component Guide

- MsTCPNetwork
- MsDevice
- MsProxyExt

MsTCPNetwork

The MsTCPNetwork provides all the configuration parameters necessary to allow the driver to communicate with a network of Microsmart devices. The MsTCPNetwork can be thought of as the "host" Microsmart device in network of Microsmart devices.

The MsNetwork is the "network-level" component in the NiagaraN4 architecture. It has the standard network component properties such as status and enabled (see "Driver Architecture / Common network components" in the NiagaraN4 Users Guide for more information), as well as properties unique to operation as a host in a Microsmart system.



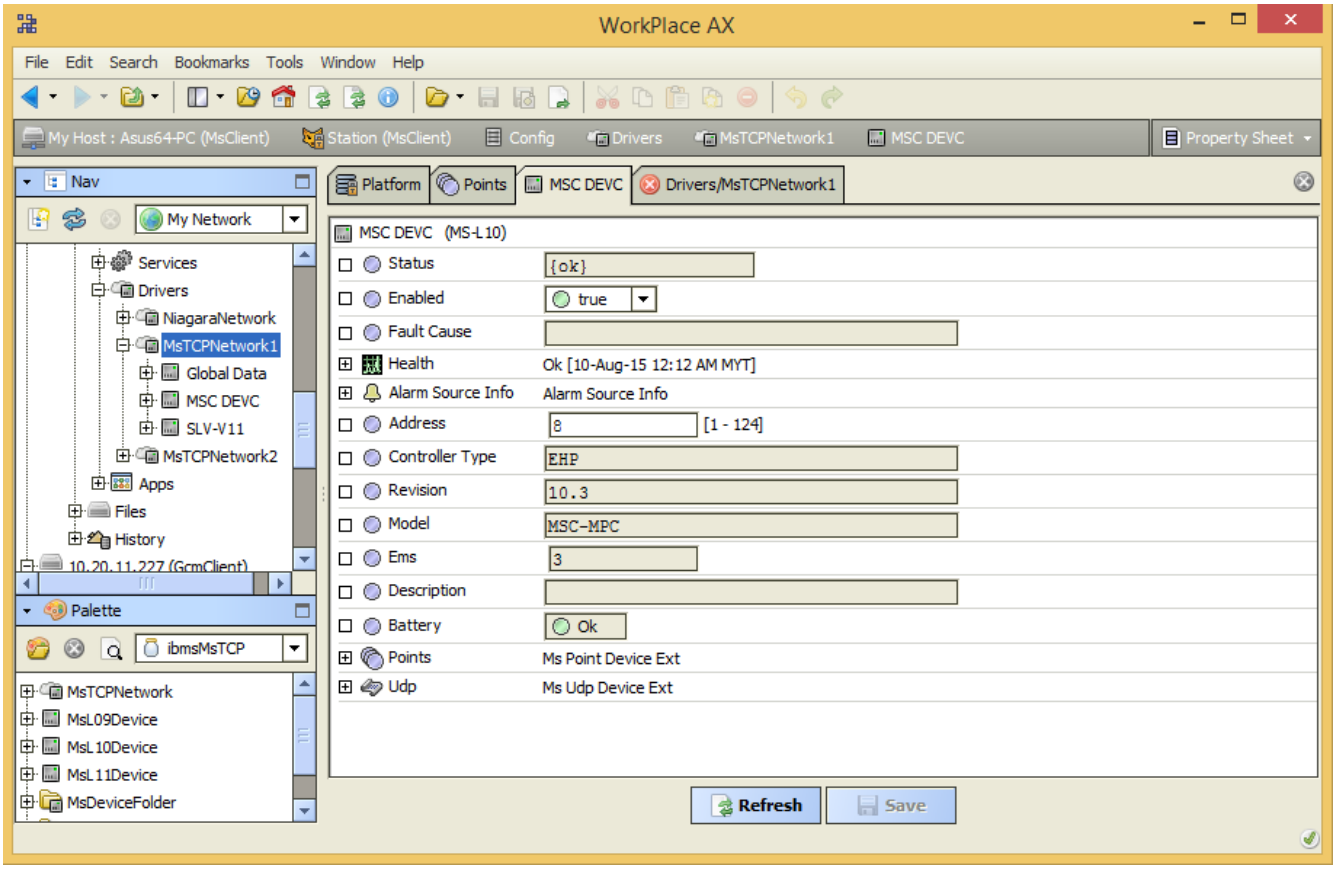
NOTE: In the following properties, the properties are inherited from the base N4 driver classes, and as such are only touched on here. For a full explanation, refer to the N4 Driver Architecture document.

- Enabled – Enables or Disables the Microsmart Driver
- Monitor – container for monitor (ping) properties.
- Tuning Policies - A container for tuning policies which determines how and when proxy points are read and written.
- Poll Scheduler - The basic poll scheduler enables/disables polling, determines the fast/normal/slow poll rates, and maintains statistics about proxy extension polls.
- Response Timeout - Specifies the mN4imum time to wait for a response to a Microsmart message is sent. If a response is not received before the timeout.
- Retry Count – specifies the mN4imum retry count if the data not response from the MIG-112 controller.

MsLxxDevice

The MsLxxDevice provides all the configuration parameters necessary to allow the driver to communicate with a given Microsmart device. The MsLxxDevice are always children of an MsTCPNetwork. MsLxxDevice also serve as a container for all of the data points that need to be polled for data.

The MsLxxDevice is the "device-level" component in the NiagaraN4 architecture.



NOTE: In the following properties, the properties are inherited from the base N4 driver classes, and as such are only touched on here. For a full explanation, refer to the N4 Driver Architecture document.

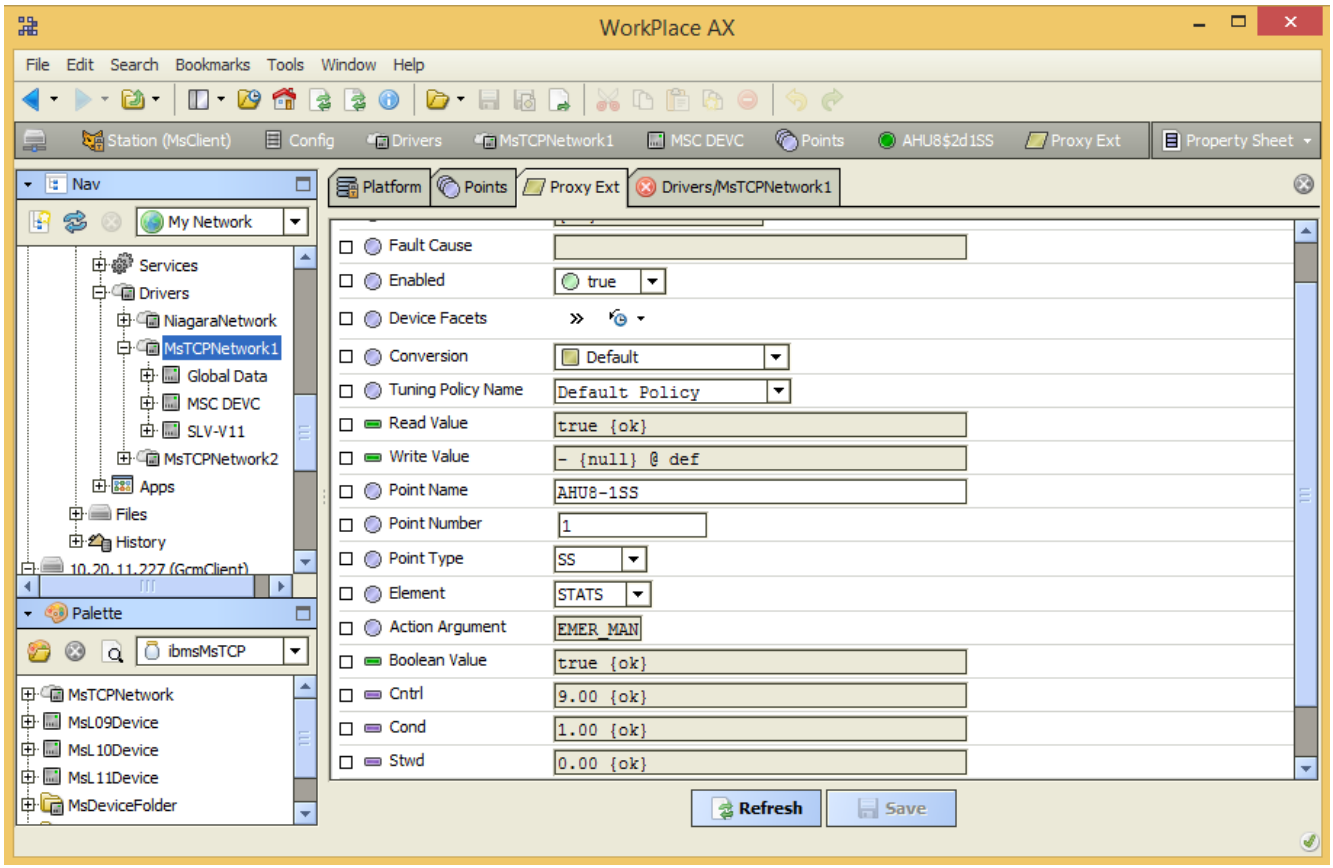
- Status – The status of the device. Will normally be {ok}. A value of {down} indicates that the last ping to the device was not answered (the "Report Exception Message" is used as the ping message).
- Enabled – Enables or Disables communication to the associated device from Microsmart Driver.
- Fault Cause – if the "Status" property value is {fault}, the fault cause is displayed here.
- Heath – contains metadata about the health of this device on the network:

  - Down – indicates if this device is down – should be false under normal operation.
  - Alarm – indicates if this device is in alarm – should be false under normal operation
  - Last OK Time – the last time of successful communication to this device
  - Last Fail Time – the last time of unsuccessful communication to this device
  - Last Fail Cause – the reason of the last comm. Failure (example – "bad checksum) .
- Alarm Source Info – configuration items for alarms generated from the ping process (device up and device down events)
- Address – Microsmart device Address, this must be in unique number.
- Controller Type – describe the model type of the controller. See *page 2* for more detail.
- Revision - describe the revision of the firmware. See *page 2* for more detail.
- Model - describe the model type of the controller. See *page 2* for more detail.
- Points – a container for all data items in this device which need to be polled for data.

MsProxyExt

The MsProxyExt types take on the readable-writable personality of the control point they are attached to. For example, an MsProxyExt, when used as an extension on a NumericPoint has "read only" functionality, but when used on as an extension on a NumericWritable can read and write the attribute values.

The MsProxyExt types are the "point-level" component in the NiagaraN4 architecture.



NOTE: In the following properties, the properties are inherited from the base N4 driver classes, and as such are only touched on here. For a full explanation, refer to the N4 Driver Architecture document.

- Status – The status of the device. Will normally be {ok}. A value of {down} indicates that the last ping to the device was not answered (the "Report Exception Message" is used as the ping message).
- Fault Cause – if the "Status" property value is {fault}, the fault cause is displayed here.
- Enabled – Enables or Disables communication to the associated device from Microsmart Driver
- Device Facets – contains metadata about the health of this device on the network:
- Conversion
- Tuning Policy Name
- Read Value
- Write Value

- Poll Frequency – the frequency to poll this point in the controller. Choices are either fast/normal/slow. Fast/Norma/Slow rates are determined by the "Poll Scheduler" property on the MsNetwork component.

- Point Name, Point Number, Point Type, and Element – re-present the identification for the Microsmart point to communicate from the Microsmart devices.

Ms Proxy Ext Element

- Value – the current value of the point.
- Cond – the current value if the condition element of the point.
- Stwd – the current value of the point state word. This is a bit map with the following bit definition (disconnect, permanent inhibit, time inhibit, loop override, reverse acting, auto tune and local mode).
- Stats – A formatted string that re presents the current status of the point.
- Alarm – the current alarm state of the point.
- Log – this output typically link to a as DMS point. The JACE will acting as DMS controller. This can be use to sending the value directly to Ms device. Mostly use for controller level 9 that do not have the point element and the Microsmart controller think that the DMS available in the network.

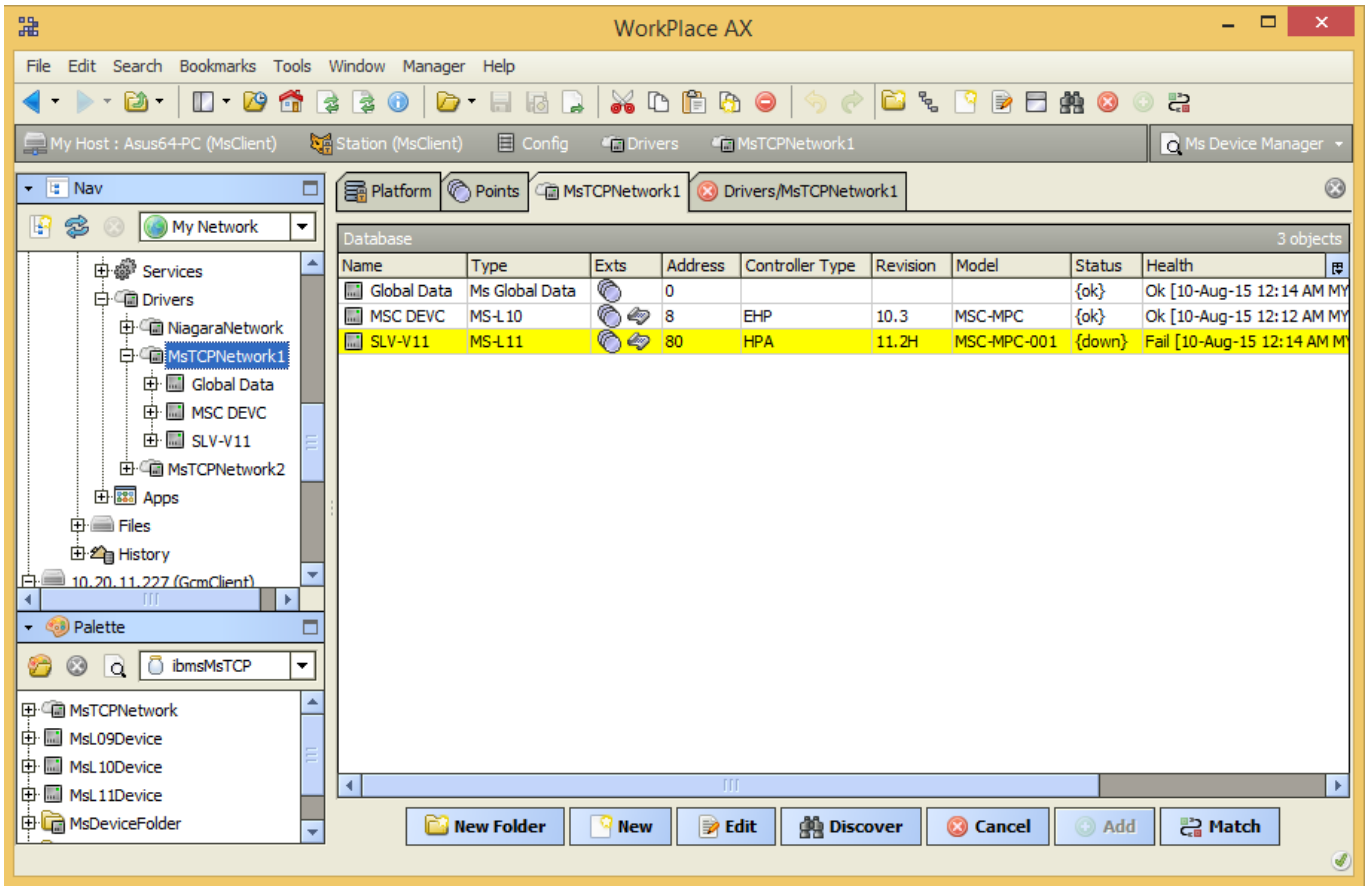
Ms View

- Ms Device Manager
- Ms Point Manager
- Ms UDP Manager
- Ms Global Data

Ms Device Manager

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

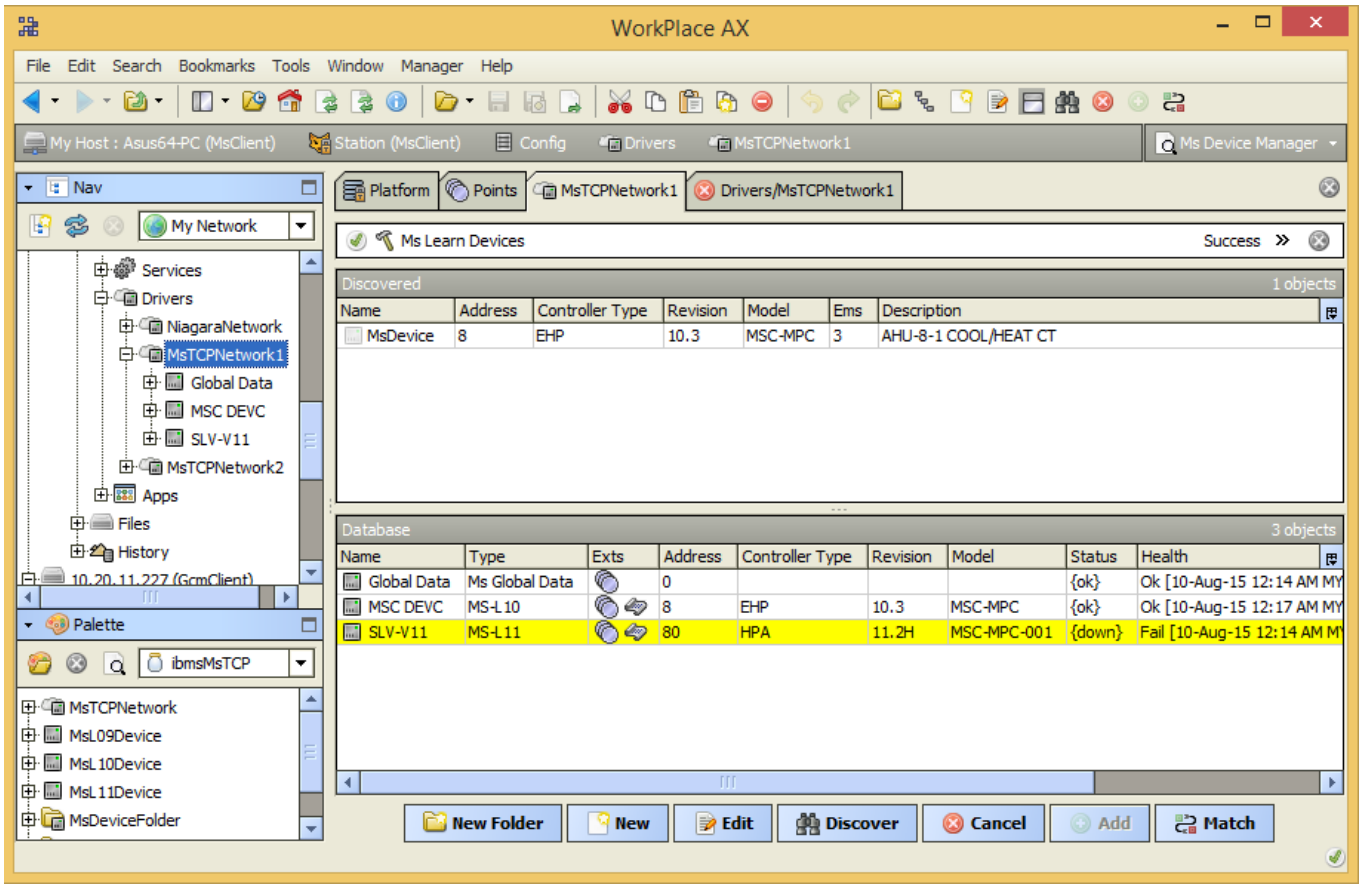
The Ms Device Manager is the default view for any Ms Network container. The Ms Device Manager is a table-based view, where each row represents a unique device. When building a network in the station, you use this view to create, edit, and delete device-level components. Below is an example Ms Device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



The view above shows a typical Ms Device Manager view.

The "New Folder", "New", and "Edit" buttons are not unique to the Ms Device Manager, and are explained in the "Niagara N4 User's Guide" in the "Driver Architecture" section. The "Match" button is not used for the Ms Driver.

You can now discover the devices to the station database by clicking the "Discover" button.



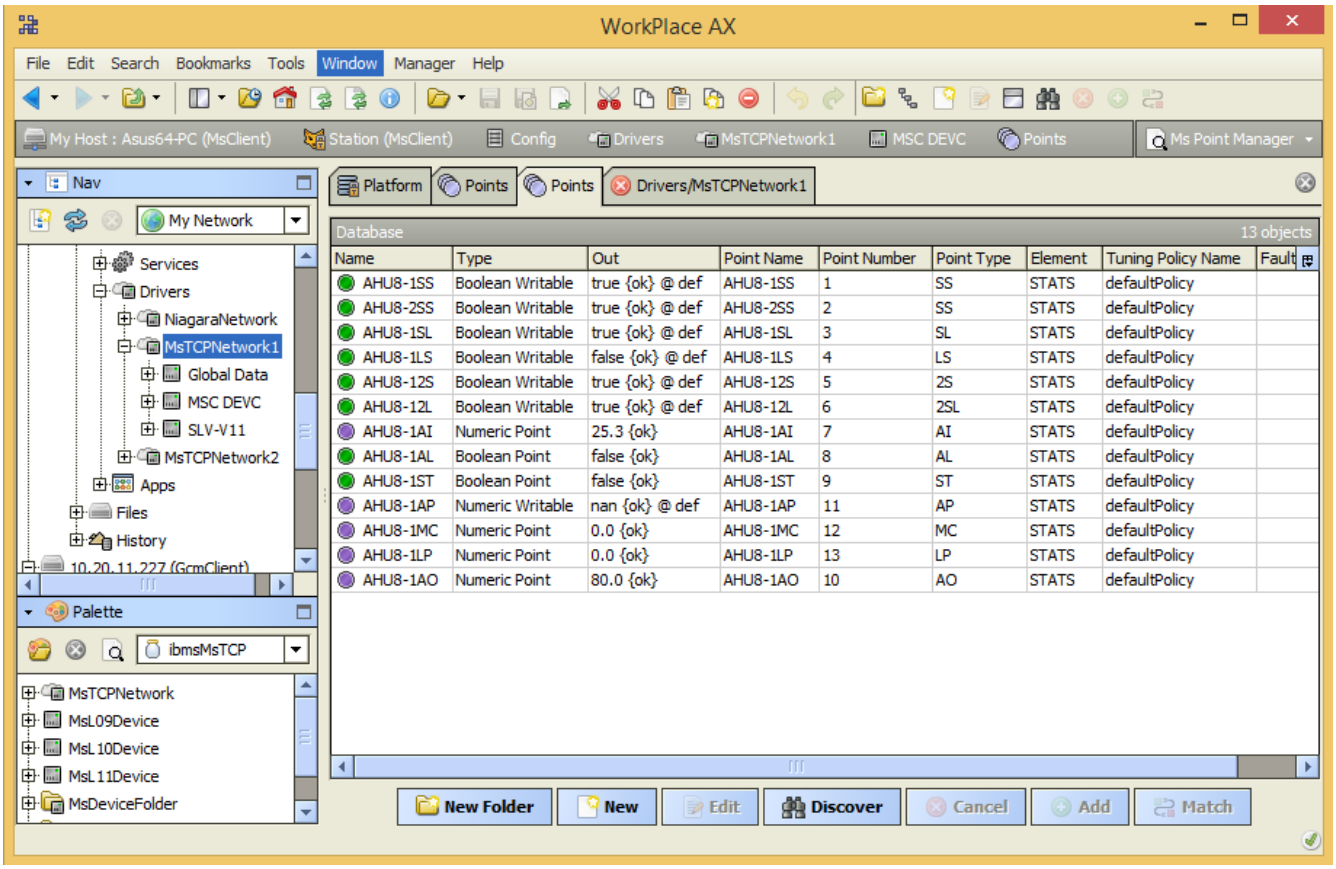
If any devices are a live and giving a response while discovering in progress the device will automatically added at the Discovered table.

Select the device at the Discovered table or use drag and drop from the Discovered table to Database table and this will automatically bring up the new Dialog, this is commonly done for re-editing items like data addresses, names, or facets.

Ms Point Manager

The Ms Point Manager is the default view when you double-click on a "points" folder (a MsPointDeviceExt type folder) under a MsDevice in the Nav tree. This manager view provides a quick and easy way to display and learn Ms points in a Ms device.

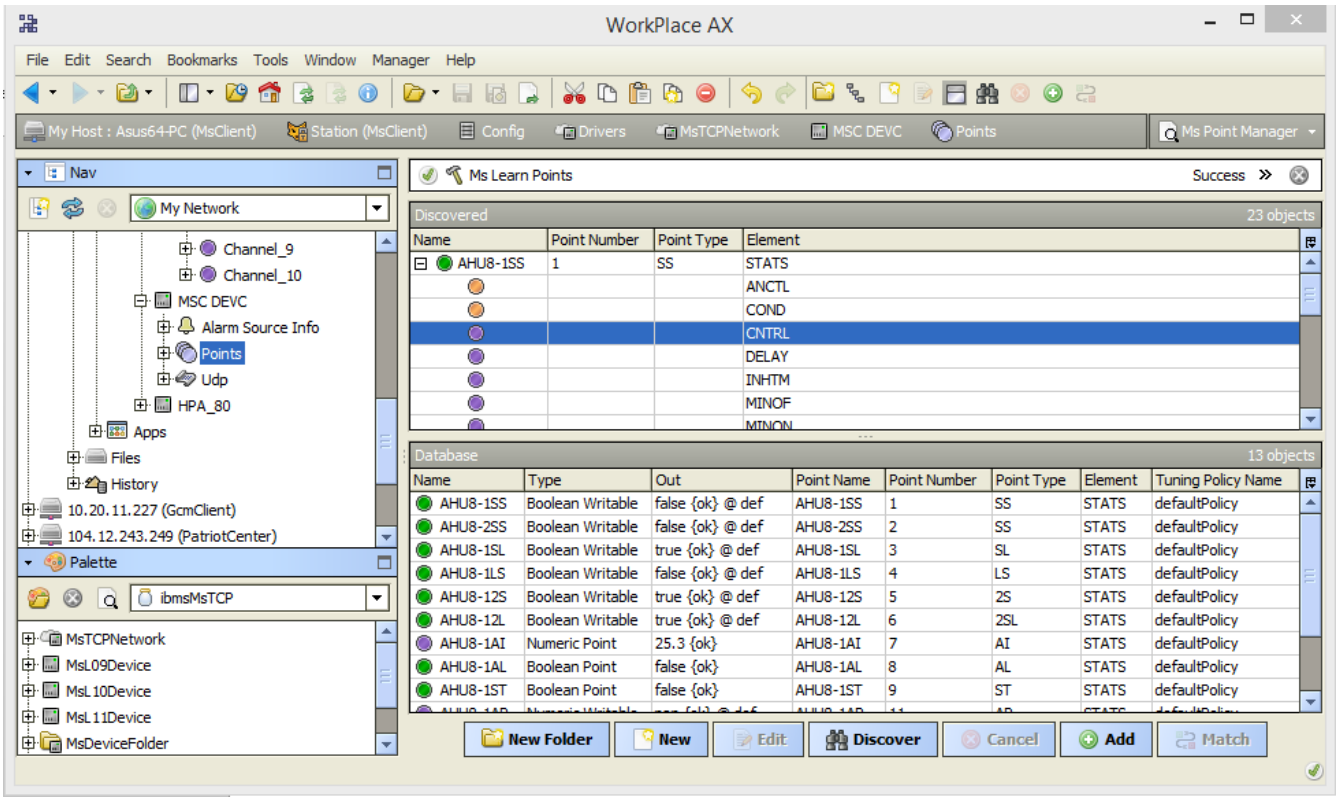
The Ms Point Manager is the default view for any MsPointDeviceExt container. The Ms Point Manager is a table-based view, where each row represents a unique Ms point within a device. Below is an example Ms Point Manager view.



The “New Folder”, “New”, and “Edit” buttons are not unique to the Ms Device Manager, and are explained in the “Niagara N4 User’s Guide” in the “Driver Architecture” section. The “Match” button is not used for the Ms Driver.

The “Discover” button implements functionality that is unique and tailored to discovering Ms 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) .

When you click Discover, the Ms Device will be searched for all points, and the results will be displayed in the top pane of the following split-pane format:



Note that the first (default) Element of each channel is listed, with a "+" mark in front of the Element number if there are additional Element in that point. To access the additional Element, click on the "+" sign to expand:

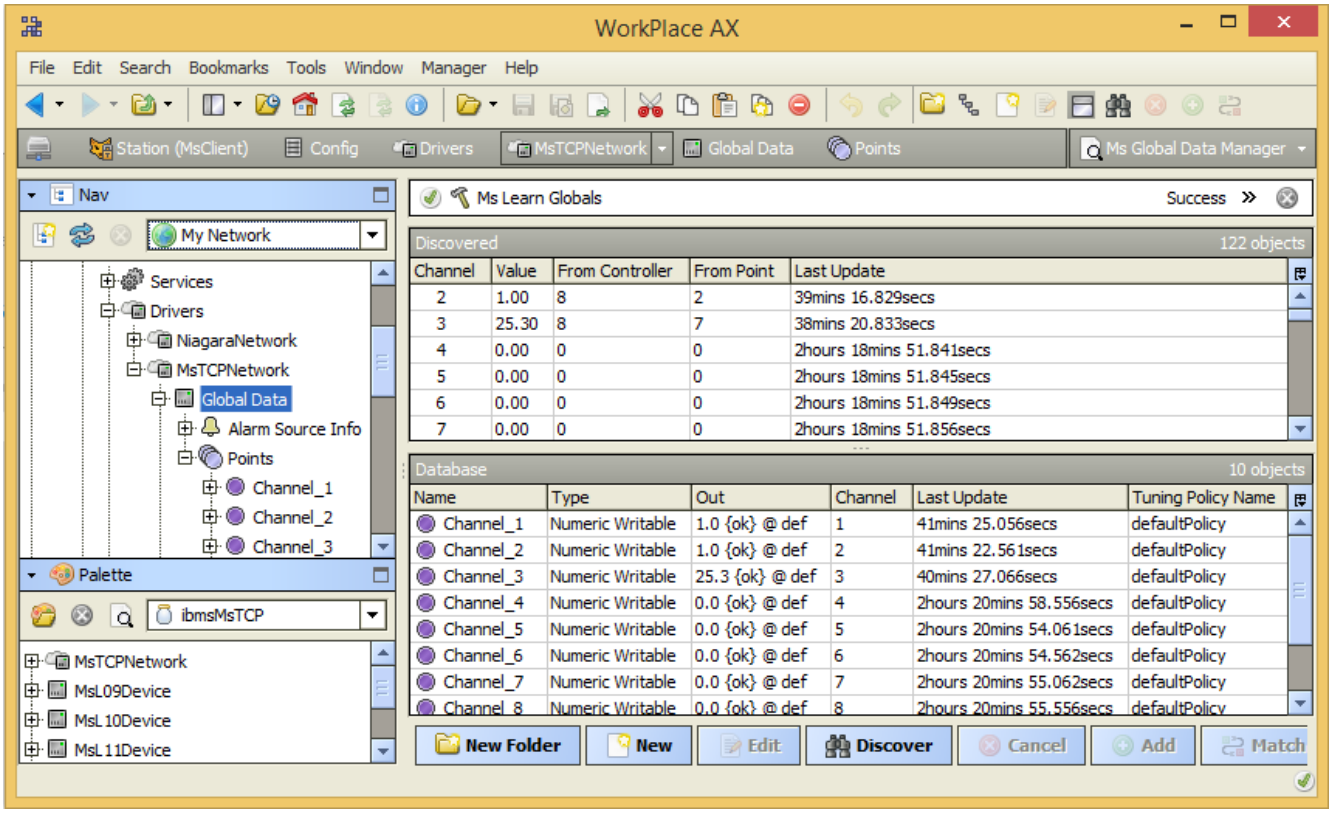
Single or multiple element can be added as control points with MsProxyExt extensions by selecting the discovered row(s) in the top pane, and clicking add. Doing so will cause the "Add" dialog box to appear: Once the point(s) are satisfactorily edited, click "OK" to create the proxy points corresponding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

Ms UDP Manager

The Ms UDP Manager is the default view when you double-click on a "Udp" folder (a MsUdpDeviceExt type folder) under a MsDevice in the Nav tree. This manager view provides a quick and easy way to display and learn Ms UDP in a Ms device.

The "Discover" button implements functionality that is unique and tailored to discovering Ms 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) .

When you click Discover, the Ms Device will be searched for all the UDP program, and the results will be displayed in the top pane of the following split-pane format:



The UDP is provides access to Microsmart UDP stored in the Microsmart controllers and gives the user programmer the ability to run and abort a UDP.

Ms Global Data Manager

The Ms Global Data Manager is the default view when you double-click on a "Point" folder (a MsGlobalDataExt type folder) under a Global Data in the Network Nav tree. This manager view provides a quick and easy way to display and learn Ms Global Data in a Ms Network.

The "Discover" button implements functionality that is unique and tailored to discovering Ms 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) .

The Global Data can be used to read from and write to a Microsmart Global Data Channel.

Note : This will only receive and display global data that is sent by a Microsmart controller. It cannot receive and display global data that is actually sent out by another Global Data. This will be one of the primary ways for passing data from JACE to Microsmart points, such as automatic set point values and outside air temperatures.

Chapter 4

Microsmart TCP Tunneling

This feature allows a user to run the OPRIF program from a client PC to the MIG-112 gateway controller, any request data from the OPRIF, the MIG-112 controller will forward the message to specified Microsmart controller. The primary reason for this feature is to support programming of the Microsmart controllers.

In order to enable OPRIF tunneling, the OPRIF application required the windows 32 bit OS, and to communicate the Microsmart controller over the TCP connection it required to install VSP (virtual serial protocol) for serial communication where you wish to run the OPRIF tools.

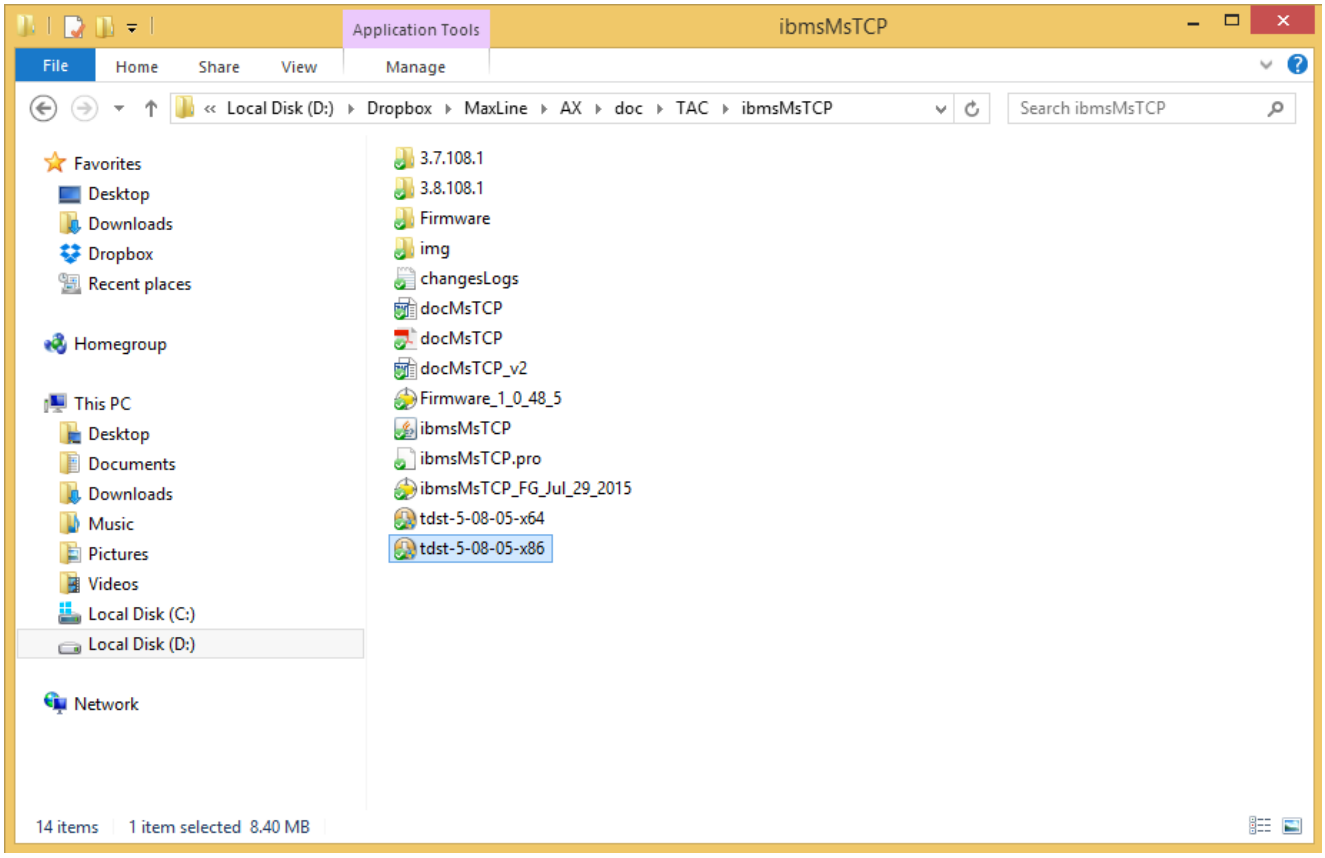
To enable the VSP service, it required to install the "tdst-5-08-05-x86.exe" installer program.

Note : The Microsmart driver is only compatible with OFRIF version 11.4.

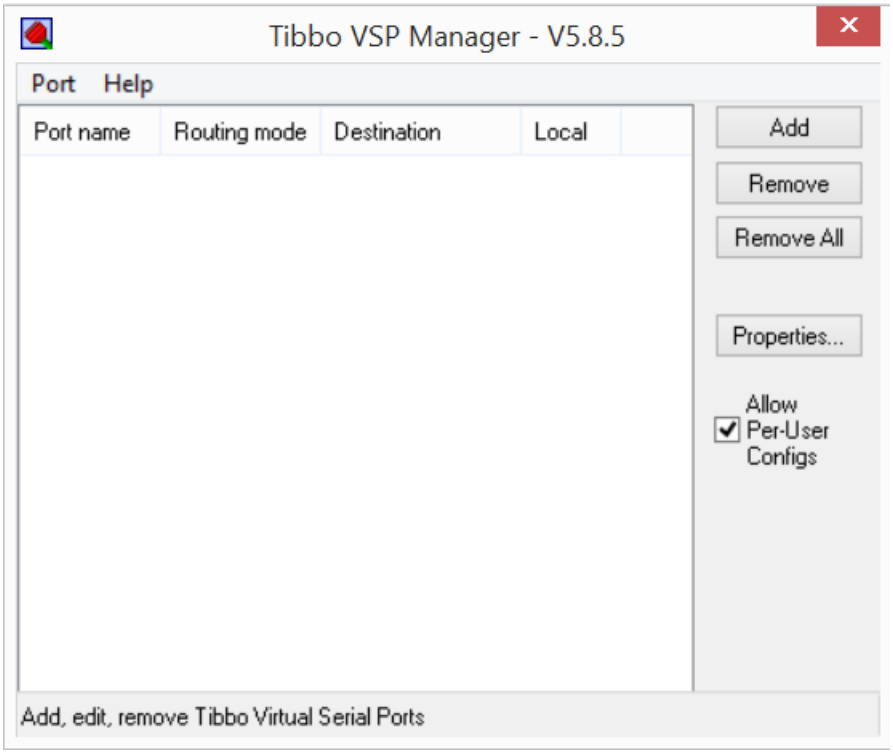
Installing VSP the Client-Side Software

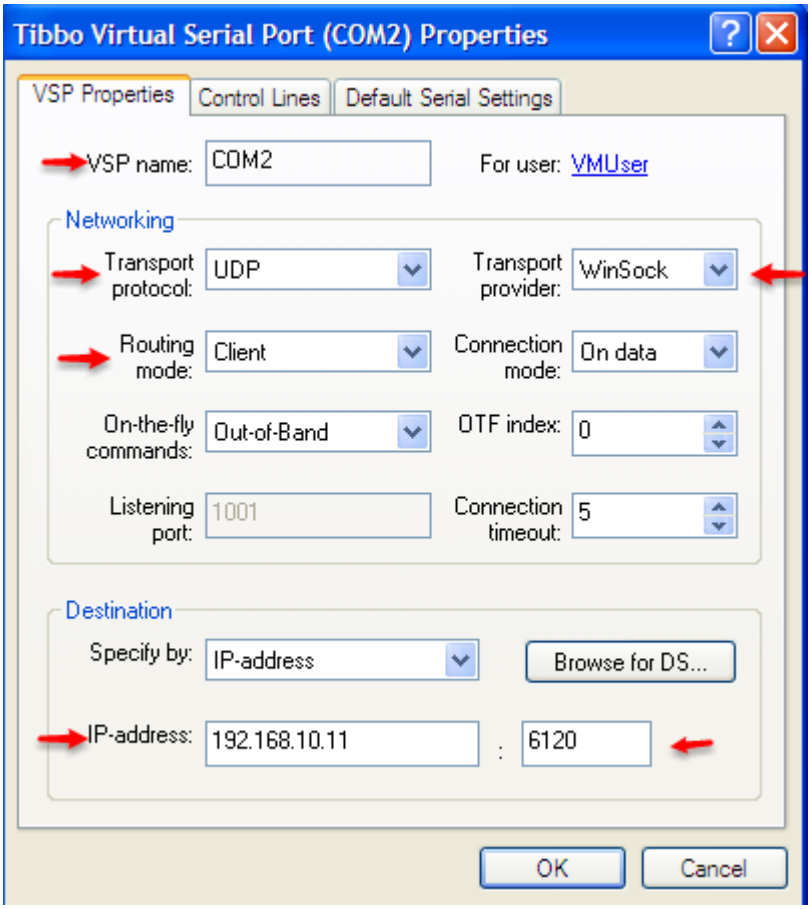
To install the client-side software:

- Close all other applications on the PC.
- Run the "tdst-5-08-05-x86.exe" application.



- Double-click on tdst-5-08-05-x86.exe.
- This start some self-extraction and the Niagara N4 Serial Tunnel Setup program
- Once complete setup run the "Tibbo VSP Manager" and click the button Add.


Tibbo VSP Manager - V5.8.5
Port
Help
Port name
Routing mode
Destination
Local
Add
Remove
Remove All
Properties...
Allow Per-User Configs
Add, edit, remove Tibbo Virtual Serial Ports


Tibbo Virtual Serial Port (COM2) Properties
VSP Properties
Control Lines
Default Serial Settings
VSP name:
COM2
For user:
VMUser
Networking
Transport protocol:
UDP
Transport provider:
WinSock
Routing mode:
Client
Connection mode:
On data
On-the-fly commands:
Out-of-Band
OTF index:
0
Listening port:
1001
Connection timeout:
5
Destination
Specify by:
IP-address
Browse for DS...
IP-address:
192.168.10.11
6120
OK
Cancel

- Select a VSP name, before selected the COM make sure do not select a port physically exist in the PC. To verify the COM go the Windows system -> Device manager -> Ports (Com & LPT).
- Transport -> UDP.
- Transport provider -> Winsock.
- Routing mode -> Client.
- IP-address -> MIG-112 gateway IP address by default is 192.168.10.11.
- Port -> RS485-D1=6120 and RS485-D2=6121.

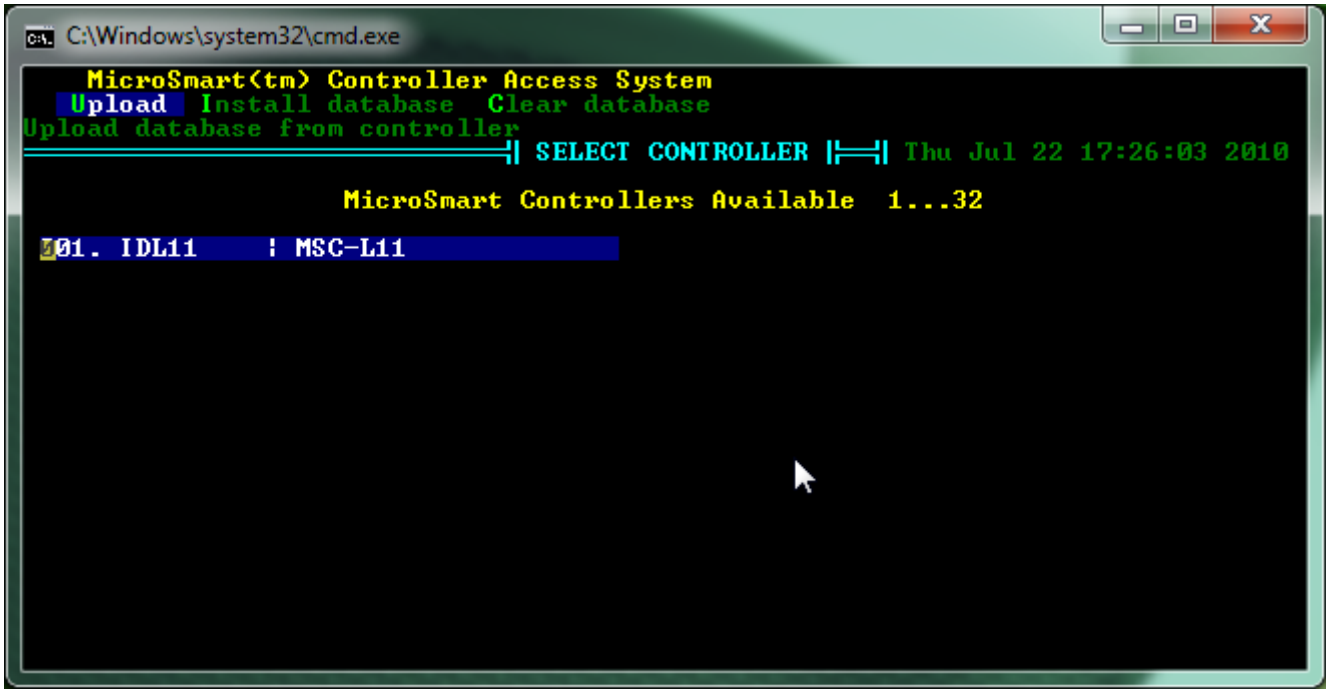
Connecting to Microsmart Tunnel.

With the VSP software installed and configured, start the OPRIF. A successful connection re-establishes the sign on screen with the virtual port shown configured.

- Press button "C" and enter the level 3 password usually is 000.

  You are now connected to the OPRIF via the MIG-112 Virtual Serial Communication.

- To get the Microsmart online controller presses the button "M". The OPRIF will discover all the devices as the screen capture below, now you can do the programming directly to the controller.



Chapter 5

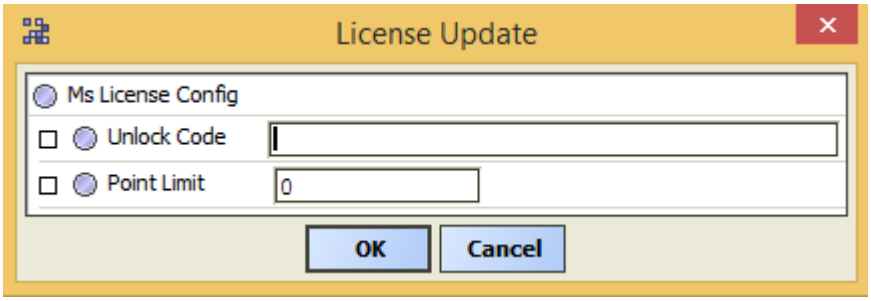
Licensing

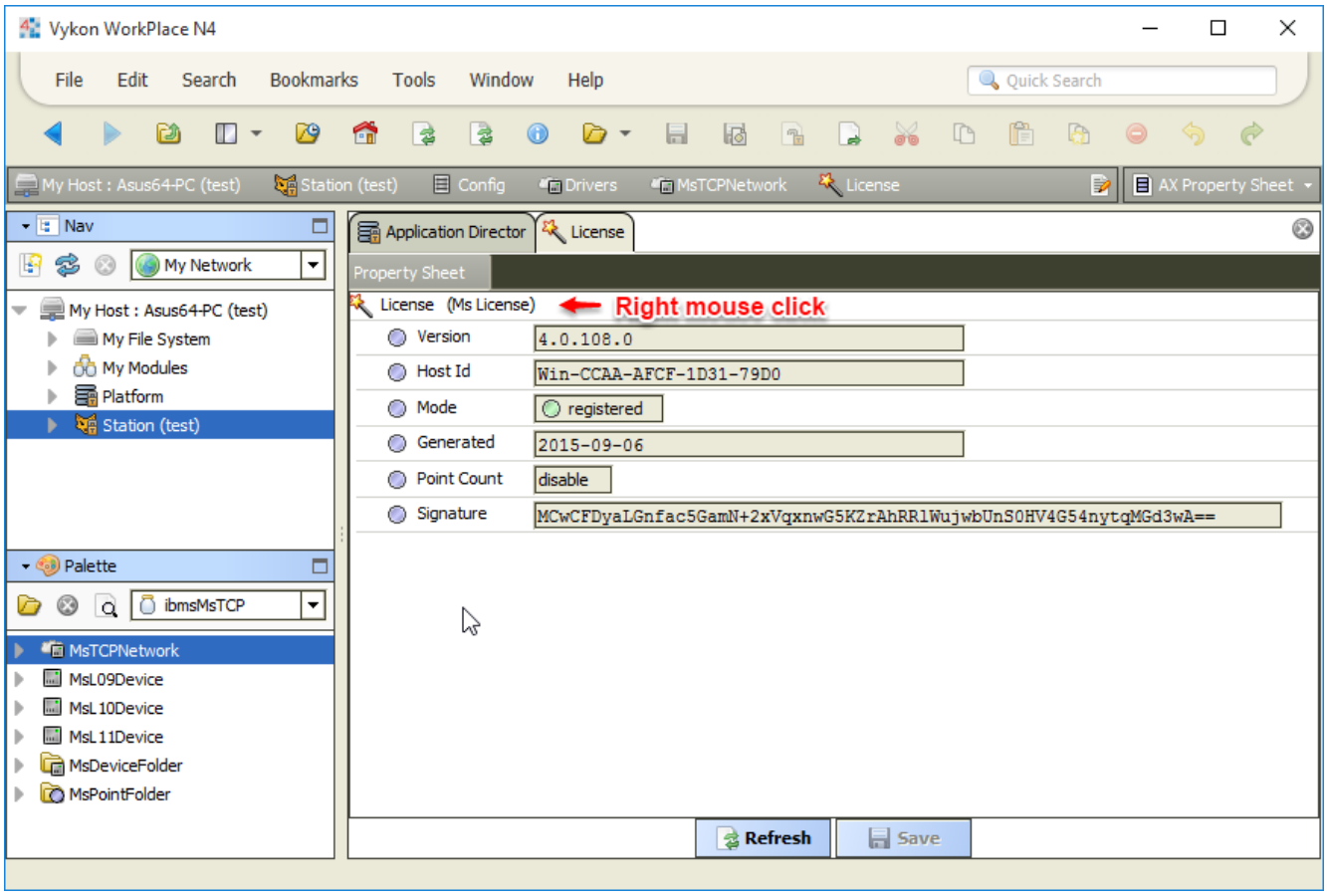
Microsmart driver License is running independently from the Tridium license, it has no restriction to run to any of the existing license vendor.

The Microsmart license provide 2 hour demo license without the unlock code. After the demo license expired the Microsmart Driver communication will stop automatically and will show fault in the Ms Network level. "ibmsMsTCP license expired". To extend the demo period user required to restart the station or reboot the JACE.

To request the license please submit the JACE/Soft-JACE or Web Supervisor host ID where is the ibmsMsTCP is install and to unlock the driver simply right click at the word "License" and the invoke action will appear "License Update".

Paste the unlock code at "Unlock code" properties. If the unlock code is successful enter the "mode" properties will automatically change to "registered" and user may require to reboot the JACE to take effect.





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