Industrial Automation
Tech Note 57 Using the OPC UA Client Driver

Abstract:

This document describes using the OPC UA Client Driver

Products:

CR Series HMI / DA Series Data Station / Graphite Controllers and HMIs

Use Case: Using the OPC Client

The OPC UA Client in Crimson 3.1 is largely the same as any other TCP/IP communications driver, reading and writing data to and from remote devices. It differs, though, in that while most drives access a pre-existing list of data items, OPC UA Servers expose complex hierarchies of data items and statistical information from which you can select. The items exposed by a given server are that server's Data Model, and Crimson captures this model in a browse file. The Crimson 3.1 configuration package can automatically create browse files for OPC UA server that are reachable from the PC on which the package is running, or a separate command line utility can be used to create them to devices that exist on other networks.

Required Software:

Crimson 3.1

Required Firmware:

Build 3109 or later

Getting Started

Referring to Figure 1, create a new database and selecting one of the Protocol slots under Network in the Communications category.

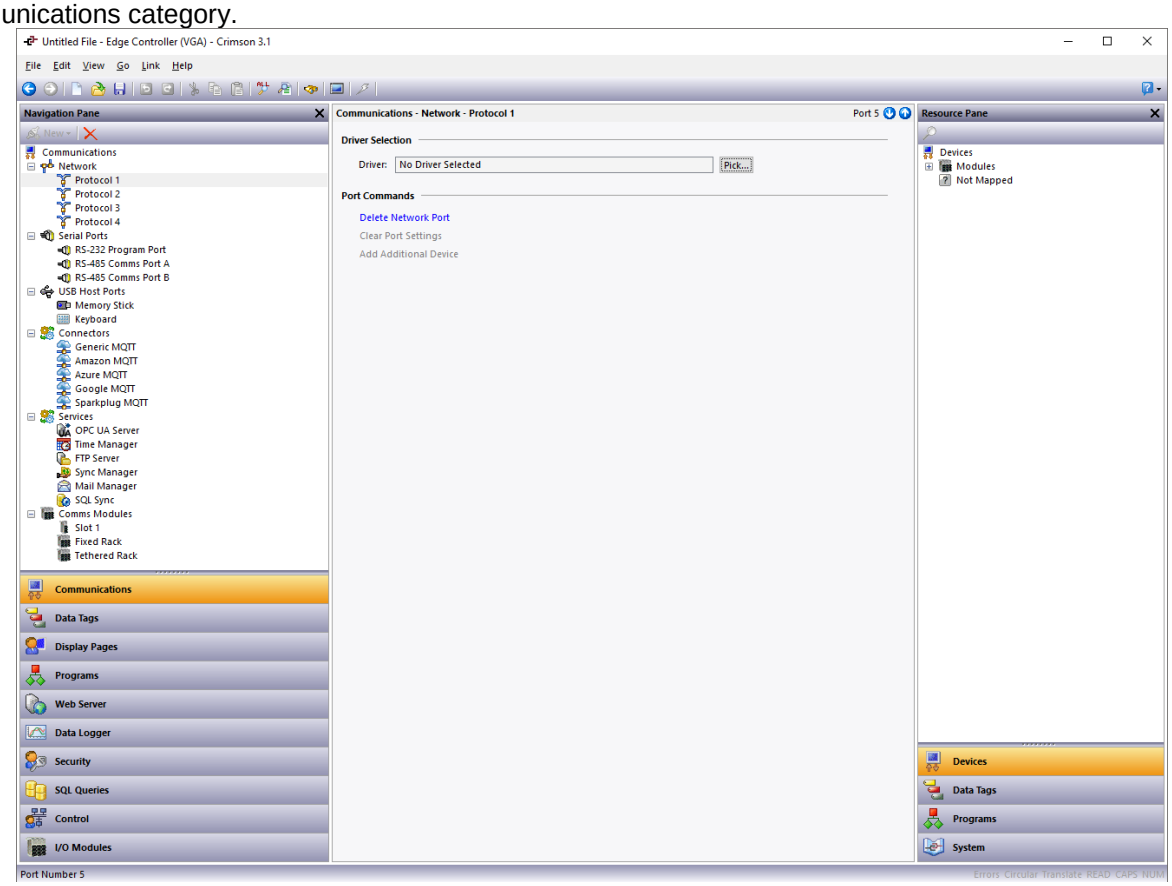

Figure 1.

Referring to Figure 1, press the Pick button and select the OPC UA Client driver, as shown in Figure 2.

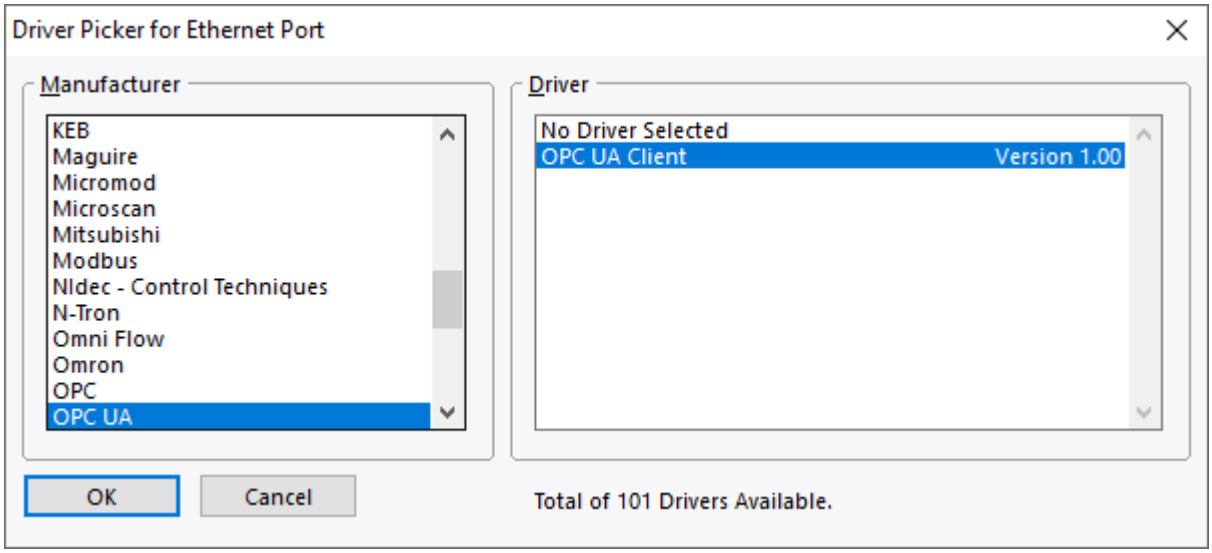

Figure 2.

Click on the device created by clicking the OK button in Figure 2. The options shown in Figure 3 will be available.

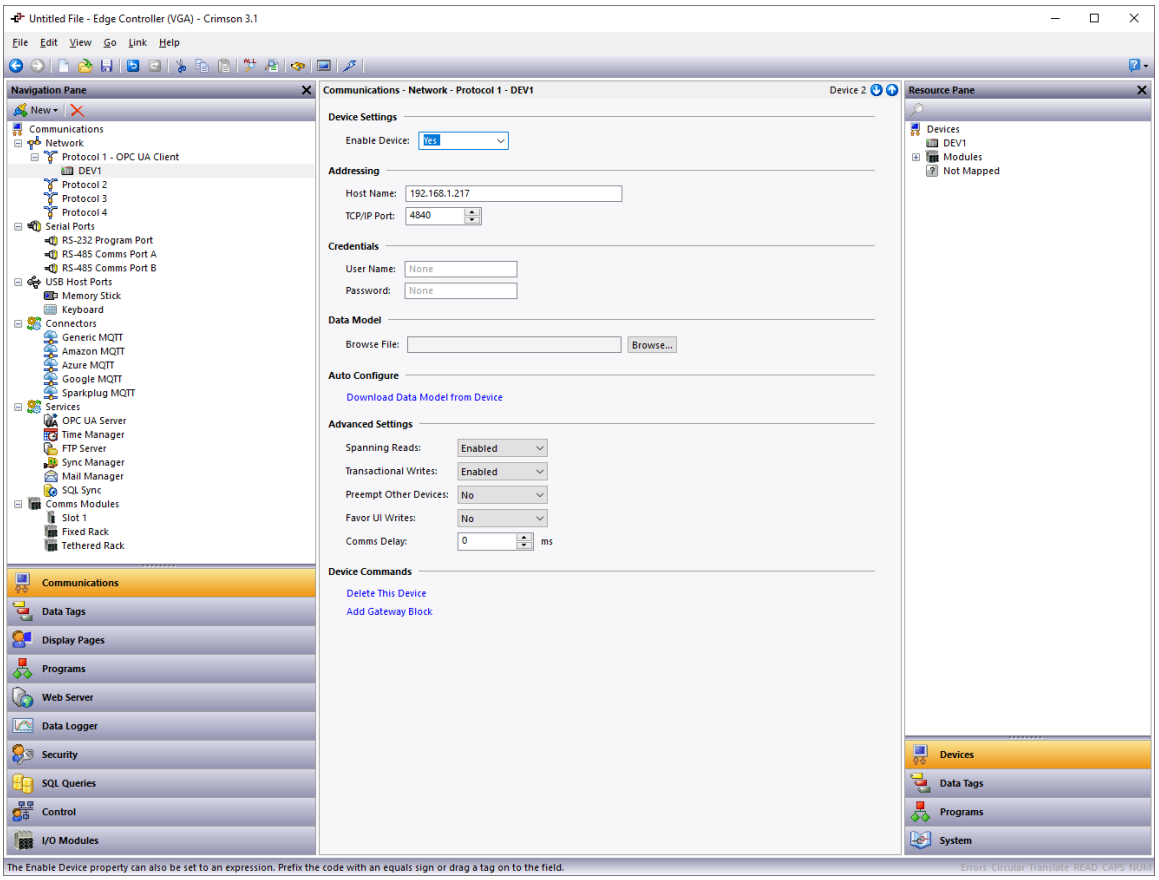

Figure 3.

In this example, we are going to configure our OPC UA client to talk to an Ignition OPC UA Server running on the PC with IP address 192.168.1.217 and listening on port 4096. (This is not the port 4840 used as standard by OPC UA Servers, but it is the default for Ignition.) In the window shown above, perform the following actions.

- In the Host Name box, enter 192.168.1.217
- In the TCP/IP Port box, enter 4096
- Leave the User Name and Password fields empty.

Configuring Ignition

If you want to follow along with this example using your own Ignition installation, you must make two changes to the default OPC Server settings via the Ignition web interface. First, select the checkbox labelled *Allow Anonymous Access*, and second, select the checkbox labelled *Expose Tag Providers*. If you do not wish to enable anonymous access, ensure you have created a suitable OPC UA user via Ignition's security system and enter the username and password into your Crimson 3.1 configuration. You might also want to create some tags within Ignition for Crimson to access. In this example, we have tags called Bob, Fred and Jim.

Browsing from Crimson

Since our configuration PC is running on the same network as the Ignition OPC UA Server, we can use the Crimson 3.1 configuration package to automatically create the browse file and thereby enumerate the data items contained in the server. To do this, in the window shown above press on the link labelled *Download Data Model from Device* and enter a suitable filename in the dialog box that appears. After a short delay, a message will appear indicating that the browse operation completed, and letting you know how many data items were discovered. If an error occurs, recheck your Host Name and TCP/IP Port, and ensure that the Ignition OPC UA Server is configured to allow anonymous access.

The data model will now have been saved to a text file at the location you specified, and the device settings updated to reference this file. Referring to Figure 4, look at the Devices section of the Resource Pane, you will ee that the DEV1 node has been populated with the data model that was discovered…

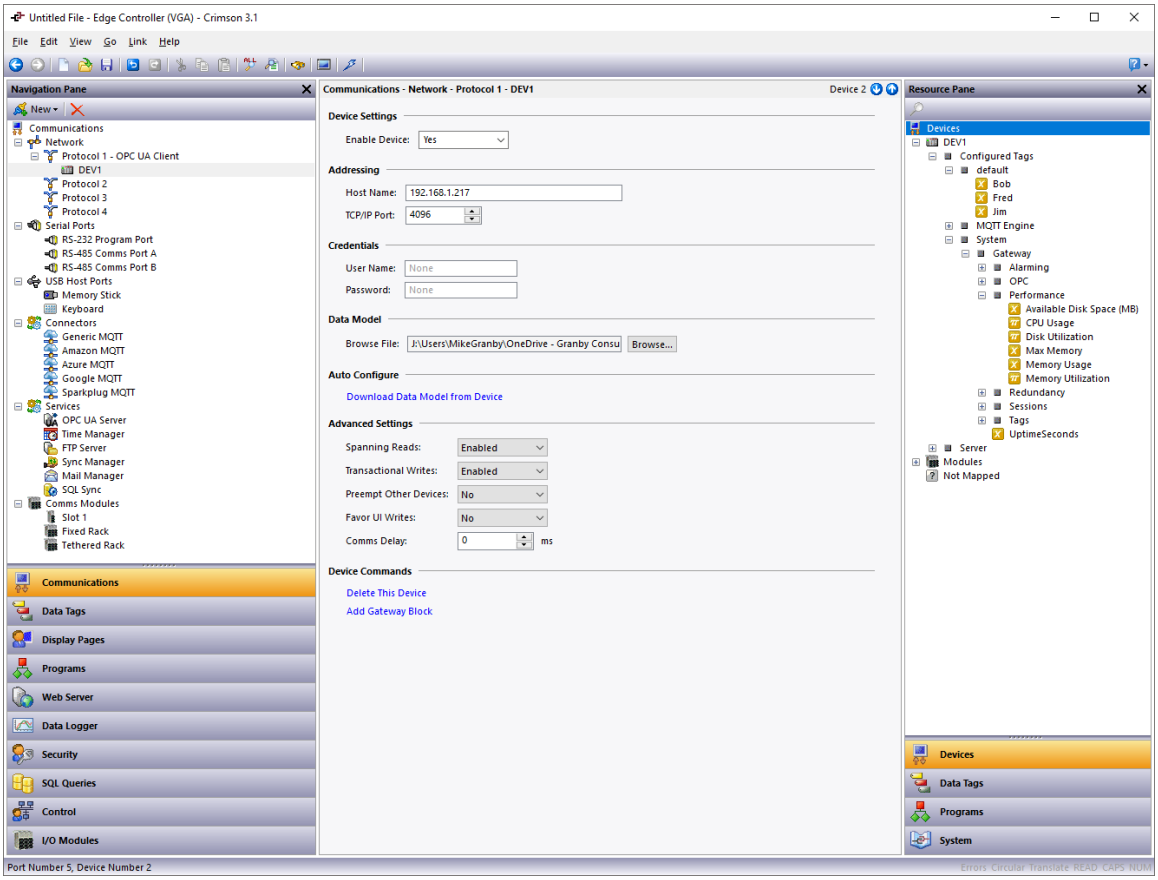

Figure 4.

In this example, the server is exposing tags called Bob, Fred and Jim, plus a wide variety of diagnostic and performance information. The data items can be dragged from the Resource Pane into gateway blocks, or can be

mapped to tags in the usual way by selecting the device name from the button next to the tag's source.

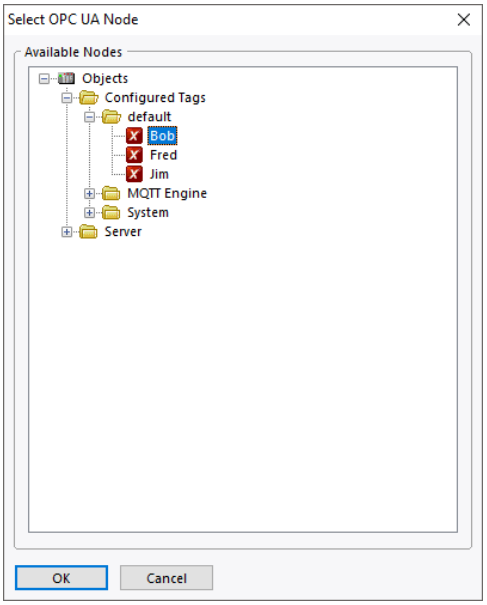

Figure 5.

The browser shown in Figure 5 can be used to select the tag source from the OPC UA Data Model. Tags shown in red are writable, while those shown in the green are read-only. The icon represents the data type in the usual way, with all the tags in this example being integers.

Browsing from the Command Line

It is possible that your OPC UA Server will not be reachable from the PC on which you are running your configuration software. In this case, you must create a browse file by running a simple command line utility on a PC that has network access to your device. The utility is called OpcBrowse and it is installed in the Utils subdirectory under the Crimson 3.1 installation folder.

An example invocation of the utility in shown below…

```
OpcBrowse -u user -p pass opc.tcp://192.168.1.217:4096 server.opc-ua-browse
```

The -u and -p options are used to provide the user name and password and may be omitted. The next element is the URI of the OPC UA Server and contains both the hostname and the TCP/IP port. The opc.tcp:// portion can be omitted, as can the port number. If the port number is not provided, it will default to 4840. The final element is the name of the file to which the Data Model information should be saved. You may use any name, but the extension opc-ua-browse is recommended. A single period will route the output to stdout.

Once this file has been created, return to Crimson 3.1 and select the Pick button next to the Browse File box in the OPC UA Client device configuration. You will be prompted for the path to the browse file, and after the file has been imported, the appropriate data items will be created.