

CloudVPN acting as a MQTT Client Quick Start Guide

SUEN00424 - CloudVPN MQTT
November 2025



1. Function and Area of Use

This material describes how to use CloudVPN / CloudVPN SecureEdge pro as a MQTT client.

2. About This Startup Document

This Startup document should not be considered as a complete manual. It is an aid to be able to configure CloudVPN acting as a MQTT Client.

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In this document we have used following software and hardware:

- CloudVPN and CloudVPN SecureEdge pro
- Nexto Xpress
- BCS Tools, software used for all Beijer PLC's
- UA Expert, software reading OPC UA tags from a PLC with OPC UA support
- HiveMQ, MQTT broker service
- MQTT Explorer, MQTT client reading data from the broker

For further information refer to:

- Manual name/number
- [Help Online](#)
- [Documentation Portal](#)
- [Connected Forum](#)

This document and other Startup documents can be obtained from our homepage. Please use the address support.europe@beijerelectronics.com for feedback about our Quick Start documents.

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4. Introduction

MQTT stands for " Message Queuing Telemetry Transport", a protocol (client-server protocol) designed for Internet of Things (IoT)-devices and applications with low bandwidth- and low power consumption. MQTT server, also known as the MQTT broker, allows you to inspect and manage connected IoT devices and messages. The broker can also provide shared services, such as retained messages. When a client has published data to the broker, other clients can subscribe to it.

This material will go through, step-by-step, how to use MQTT functionality in CloudVPN. A Nexto PLC is connected to the CloudVPN over Ethernet and using the driver OPC UA in CloudVPN. There are othe drivers available such as Modbus, EtherNet/IP and several more. Tags in Nexto are read and sent over MQTT to a broker (cloud based).

CloudVPN only supports encrypted MQTT Messages, in JSON or Sparkplug B format



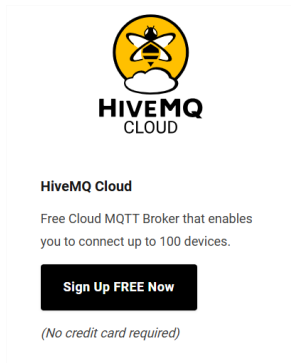
CloudVPN has built in buffering of data (up to 6GB storage), if Internet connection is lost. When the Internet connection is working again, all buffered data will be published in the broker.

When using MQTT it is up to the user to select and configure the broker, create application to read (subscribe) and present data from the broker.

5. Setup of MQTT broker

There are many suppliers of broker services. This material describes the broker from the company HiveMQ, the broker is called “HiveMQ Cloud”.

[Get HiveMQ On-Premise or Cloud-Based MQTT Broker | Download for Free](#)



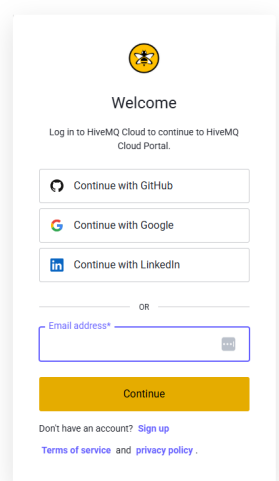
Create an account or login through GitHub / Google / LinkedIn /Email.



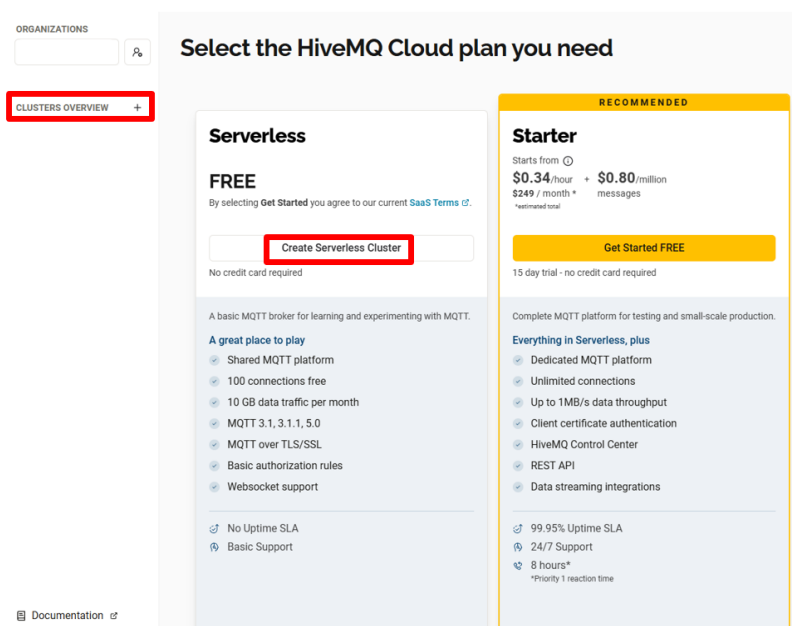
Unleash the Potential of IoT with HiveMQ Cloud.

HiveMQ Cloud is a fully-managed service for your IoT messaging needs.

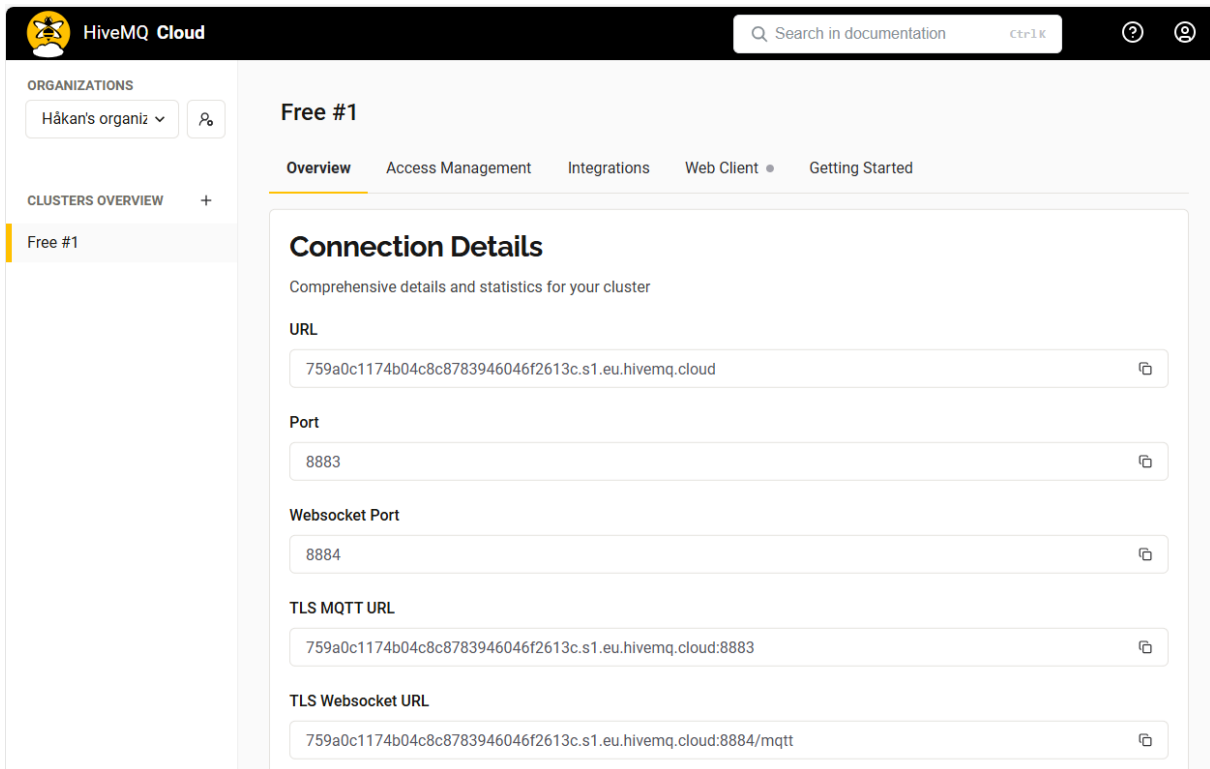
- ✓ Start for Free: Kickstart your IoT journey by connecting up to 100 devices for free.
- ✓ Unrestrained Integration: Boost your use cases with seamless data integration with third-party services.
- ✓ Scalability with Ease: Upgrade as needed. HiveMQ Cloud offers reliability and security, irrespective of scale.
- ✓ Total MQTT Support: Leverage our complete support for the MQTT specification for adaptable and efficient IoT solutions.



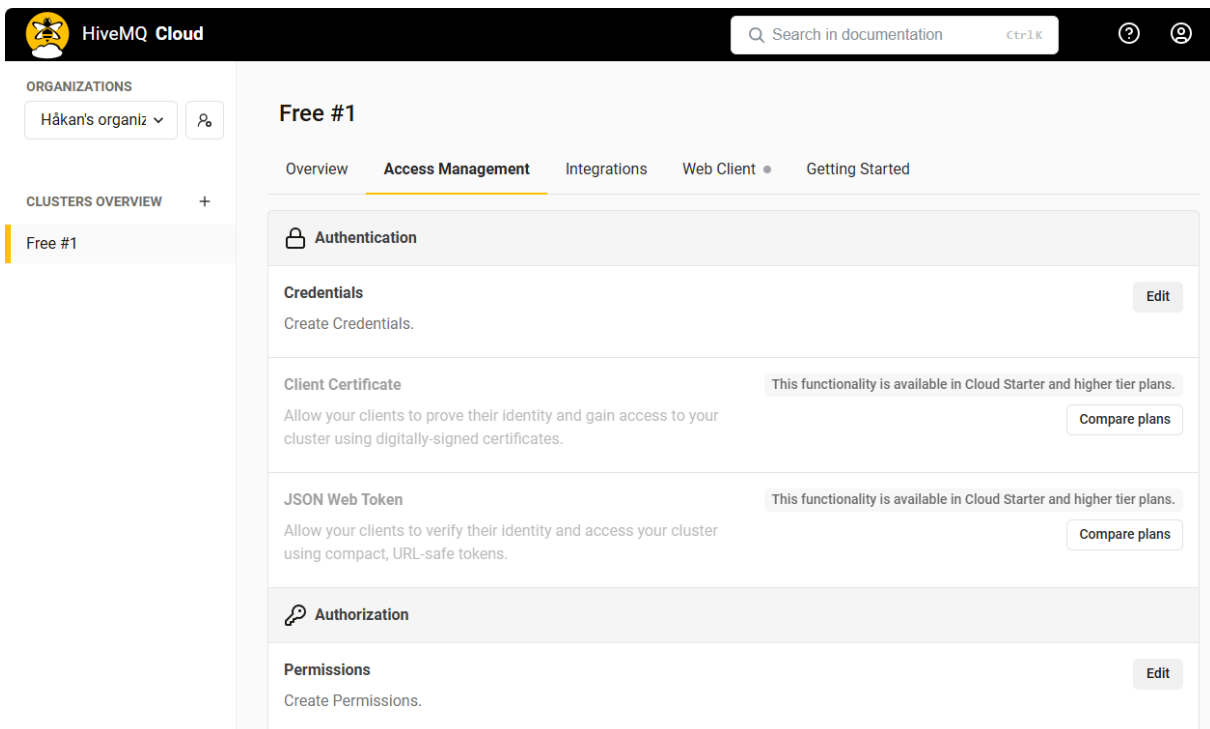
When account created and logged in, click on “Create Serverless Cluster”.



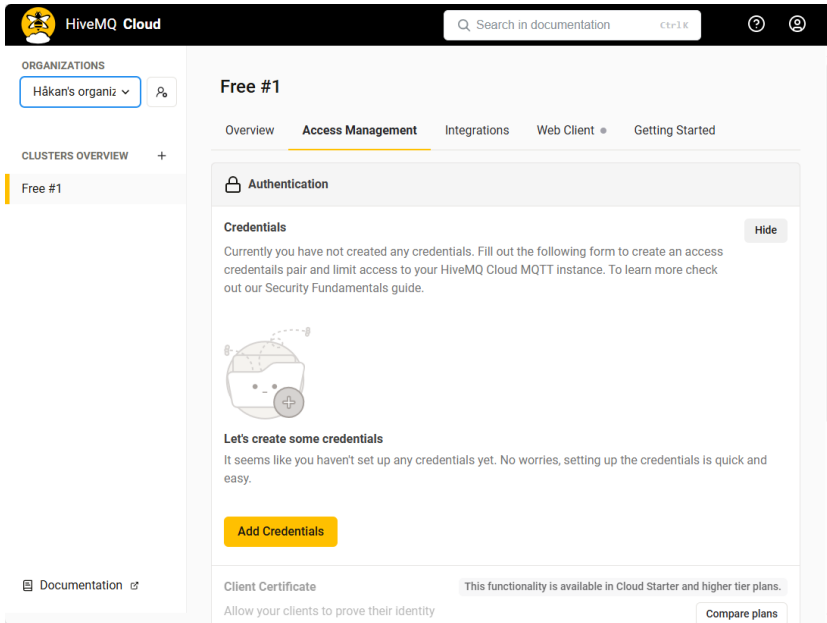
All details needed to connect to the broker are shown below:



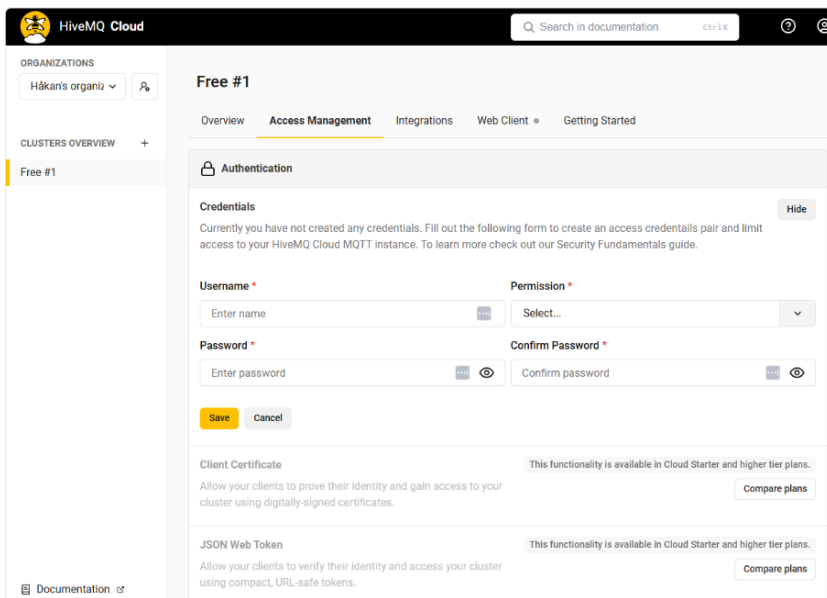
Click on tab “Access Management”, Click “Edit” on the “Credentials” section:



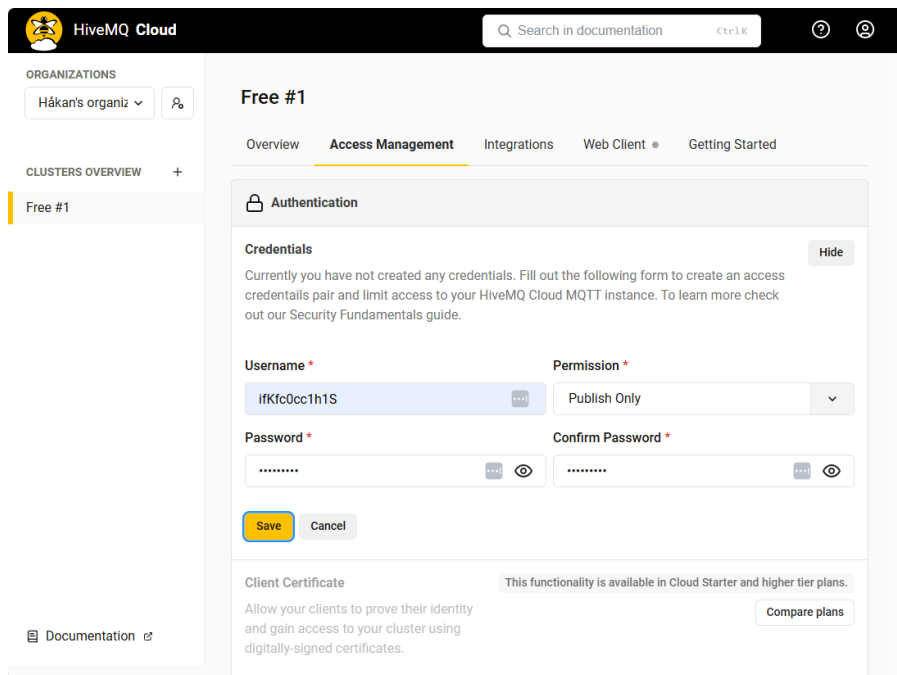
Click “Add Credentials”:



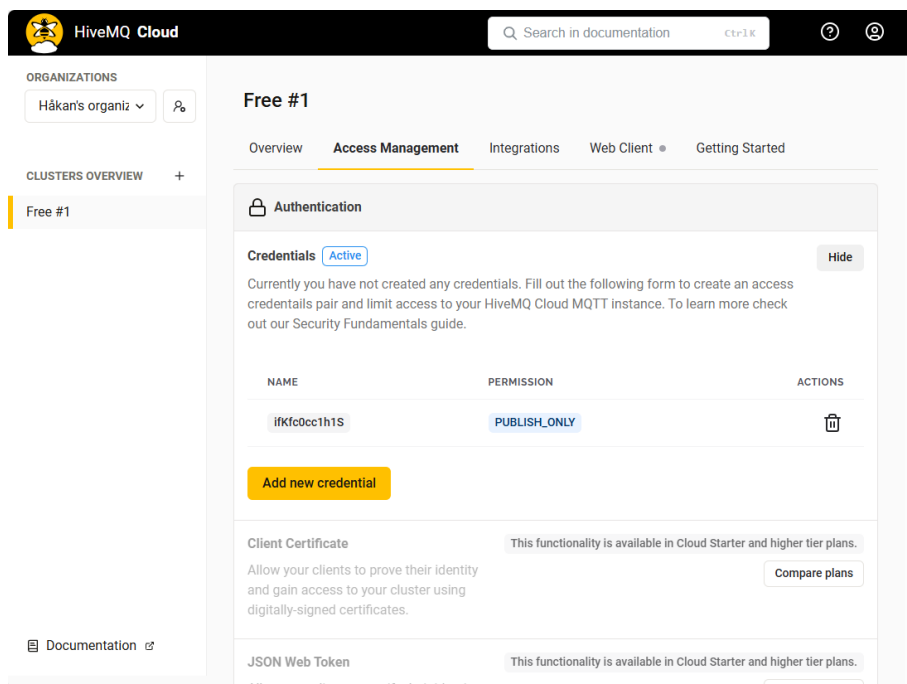
Click “Edit” on the “Credentials” section:



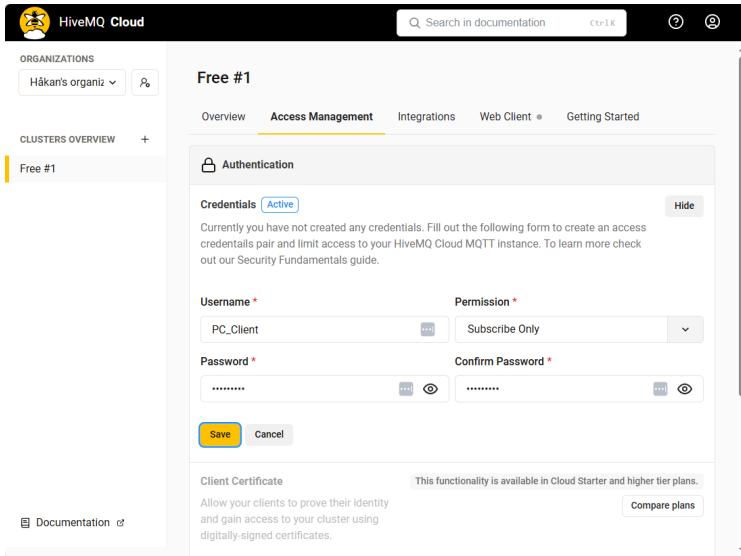
Create a user to publish data from the CloudVPN, since CloudVPN only can publish data set “Permission” to “Publish only” and click “Save”.



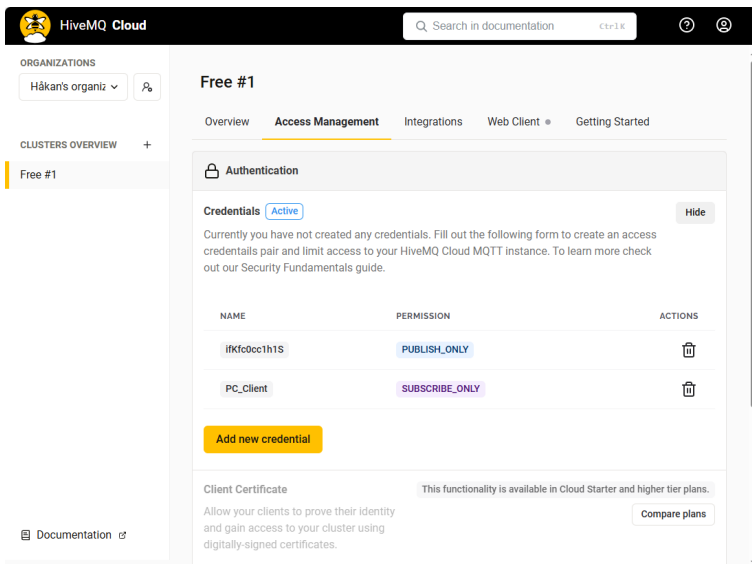
To read the data (subscribe) from the broker, create a new user (client).



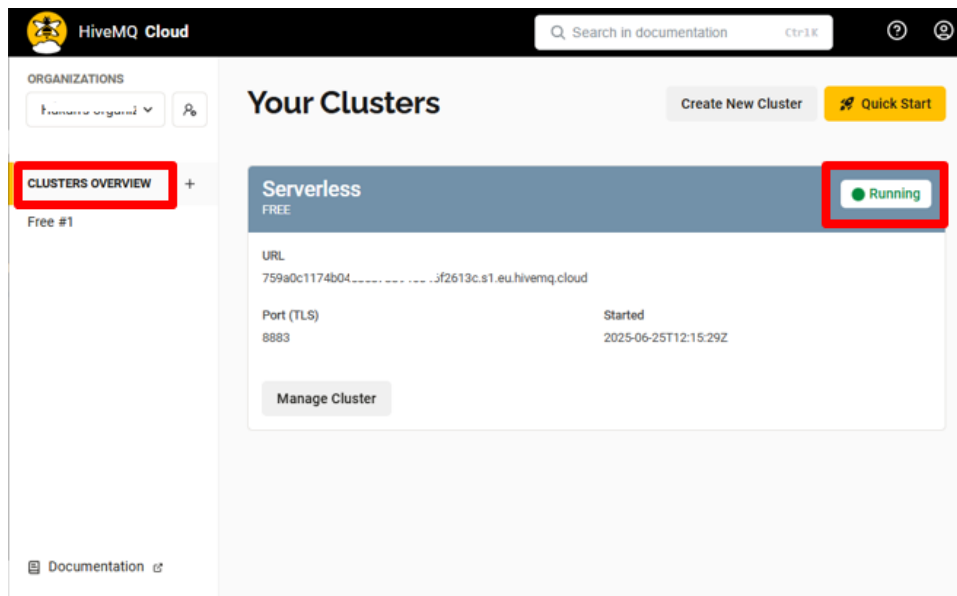
Create a user to subscribe data from the broker, set “Permission” to “Subscribe only”, click “Save”.



One user to publish data in the broker (CloudVPN) and one user to subscribe data from the broker (MQTT Explorer):



Click on "Clusters Overview" to make sure that the MQTT Broker is running.

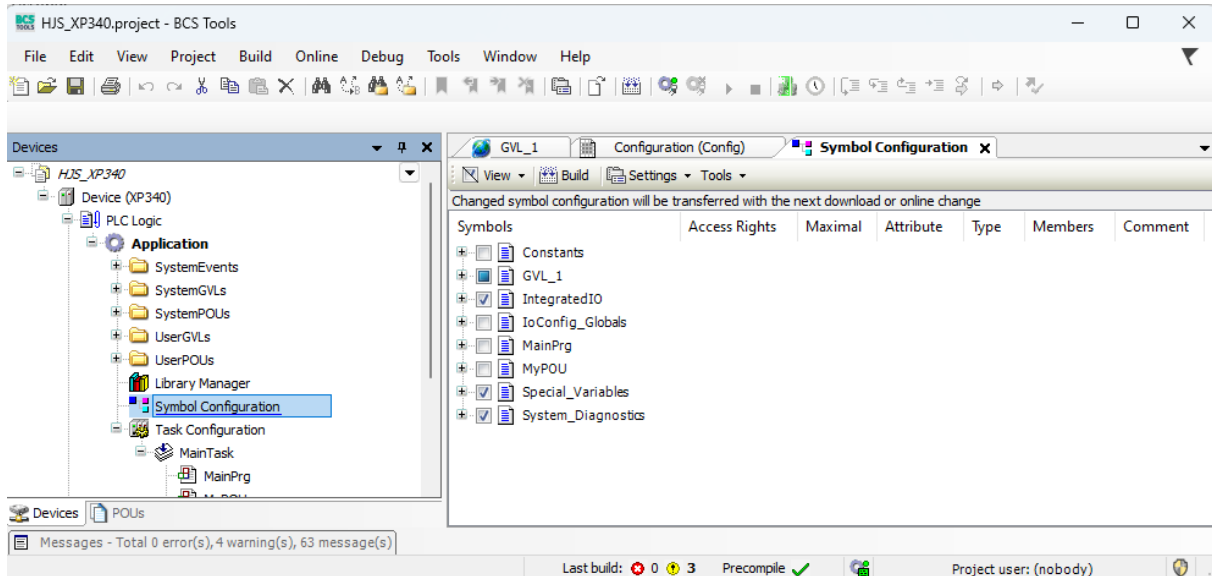


Next step is to enable OPC UA in Nexto PLC and use the PLC's tags as data to be sent to the MQTT broker.

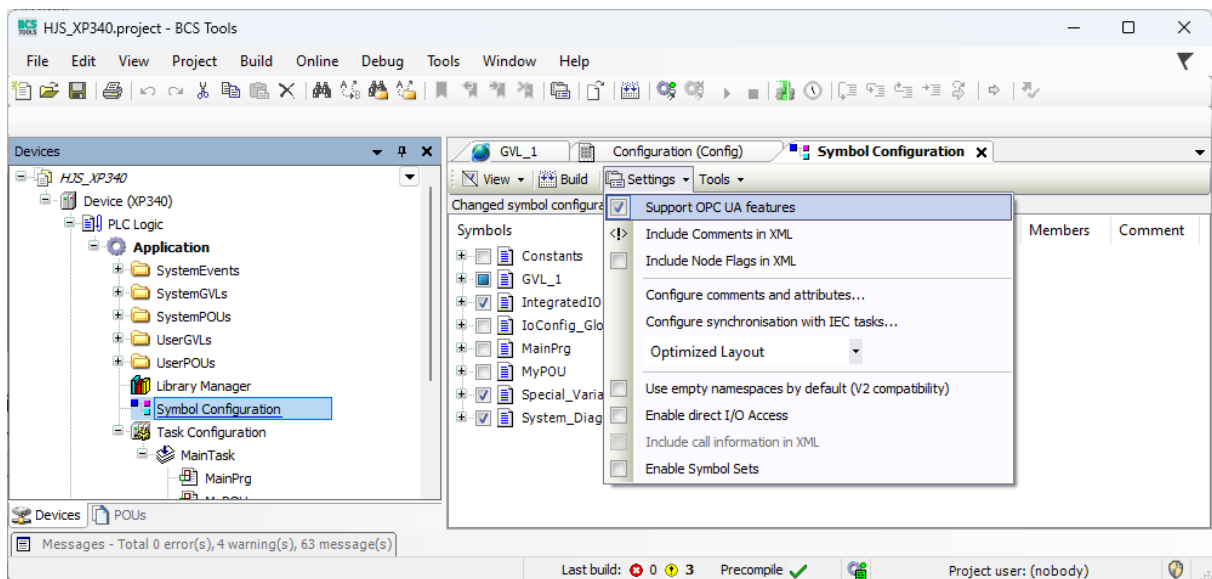
6. Enable OPC UA in the controller

The pictures below are from the software BCS Tools, a software used for all CODESYS controllers that Beijer Electronics have in the product portfolio.

In this example we use variables from Nexto PLC. Enter “Symbol configuration” in BCS Tools.



Click on Settings and tic the box “Support OPC UA features”

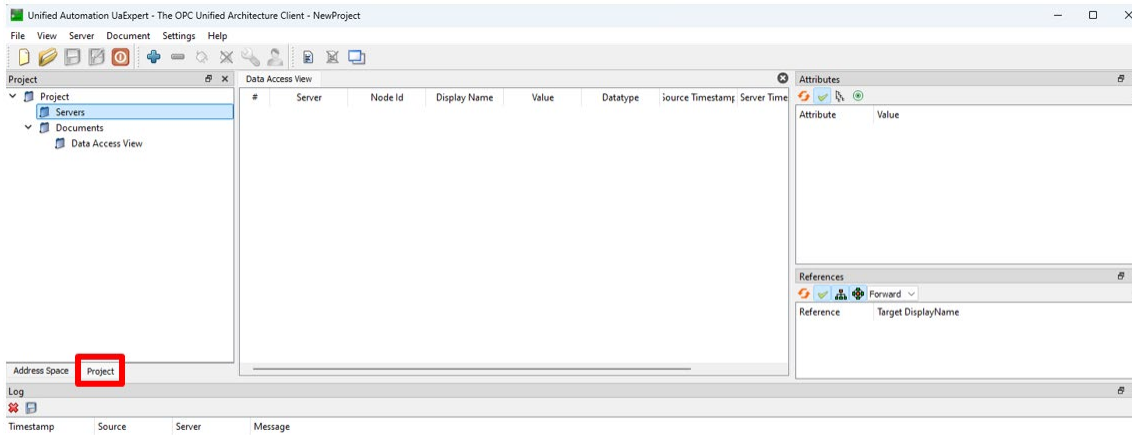


Next step is to identify the OPC UA tags so they can be used in CloudVPN.

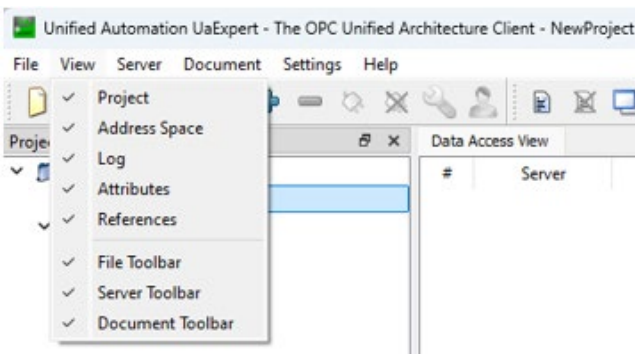
7. Test to read OPC UA tags from the device

Since OPC UA tags are rather complicated we recommend to use a software to read the OPC UA tags from the device. In this case we use UA Expert (version 1.7.1)

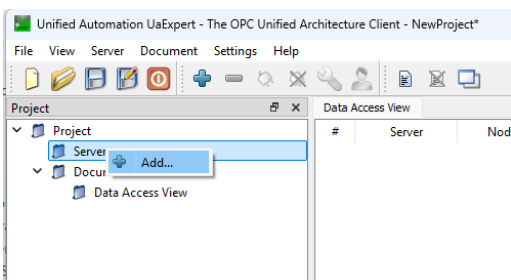
If OPC UA tags are known, go to next section.



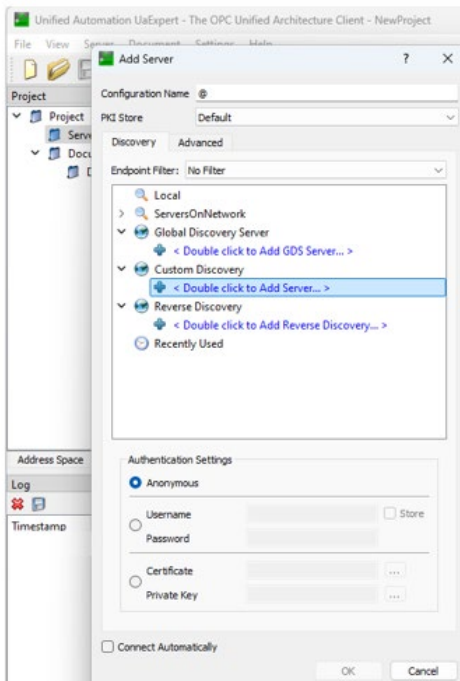
Make sure all selections under "View" are active.



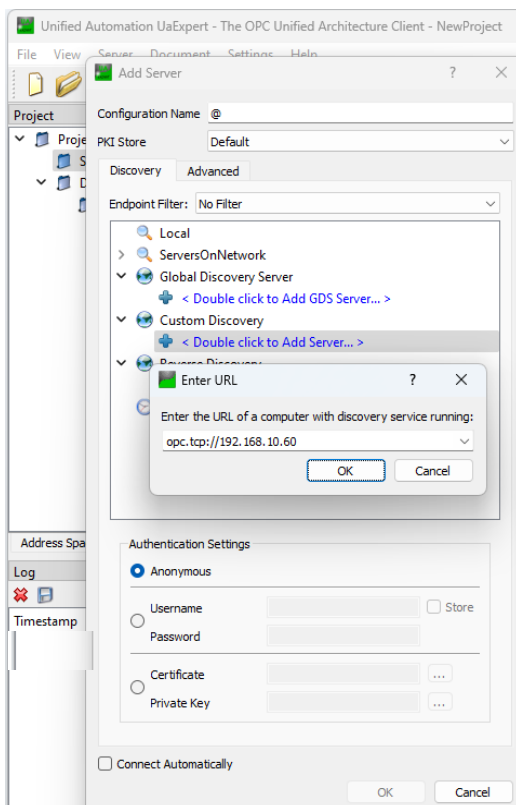
Right click with the mouse on "Servers" and click "Add..."



Double click on “< Double click to Add Server...” under “Custom Discovery”.

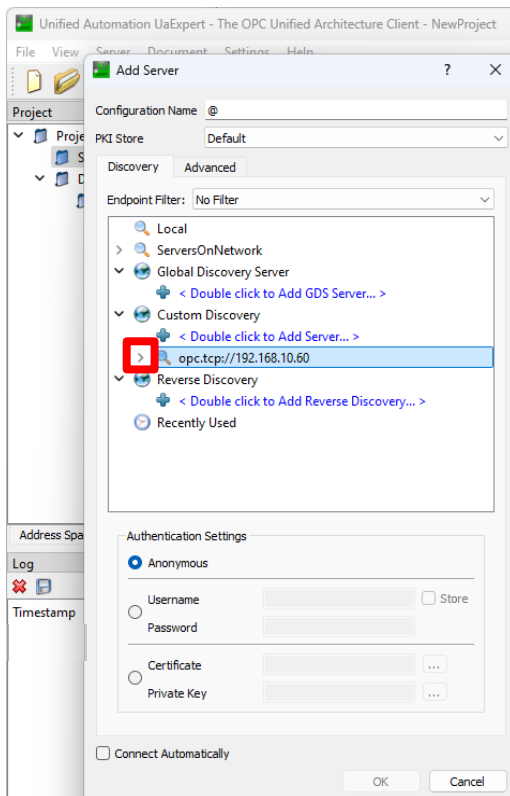


Enter the IP address of the device, keep “opc.tcp://” before the IP address, and click “OK”.



Test to read OPC UA tags from the device

Click on the arrow to expand, note that the PLC must be reachable either directly from PC or over remote access.

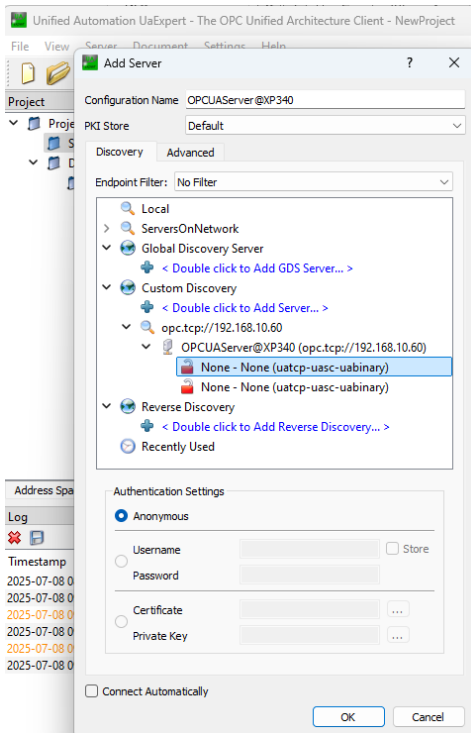


The name after “@” sign is read from the device. Click on one of the “None - None (uatcp-uasc-uabinary)” and exit with “OK”.

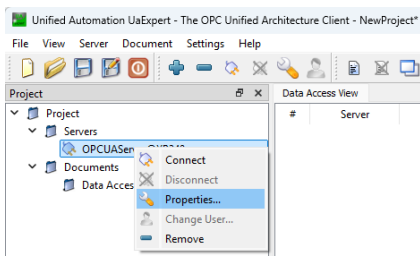
*Initial tests we recommend to use anonymous login (without username and password). This must be activated in the connected device to be able to use login with password.

Test to read OPC UA tags from the device

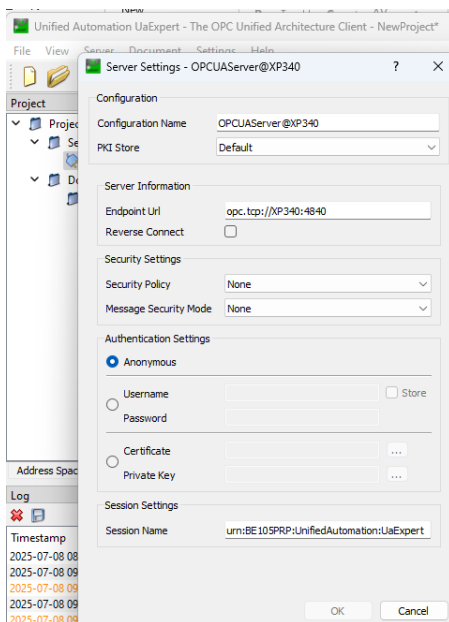
Click on one of the “None - None (...)” and exit with “OK”.



To check the made settings, right click with the mouse on the created server and click on “Properties”.

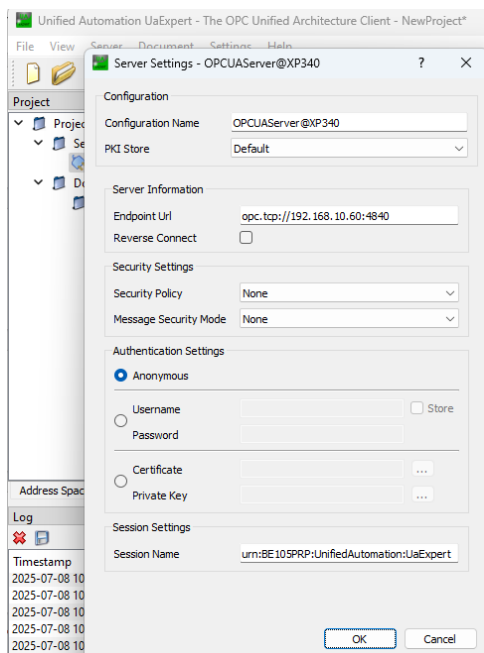


Port 4840 is default for OPC UA communication, and is used by BCS Tools.

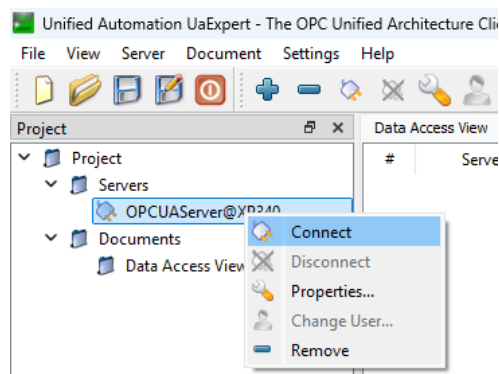


* Port number 4840 is default for OPC UA communication, and is used by BCS Tools

The IP address can be inserted instead of the name, click “OK” or (if no changes have been done) “Cancel”.

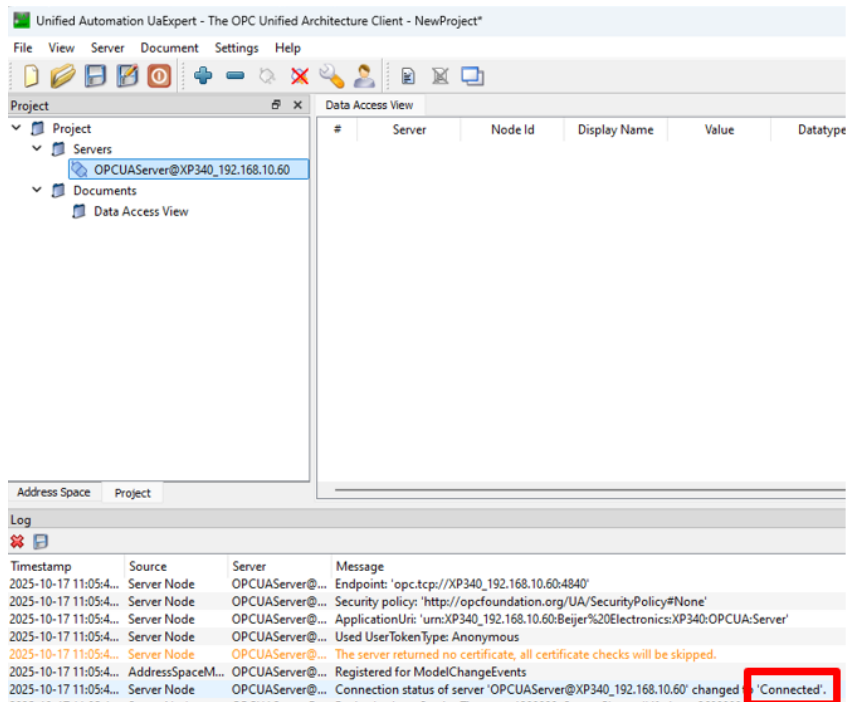


Right click with the mouse on the created server and click on “Connect”.

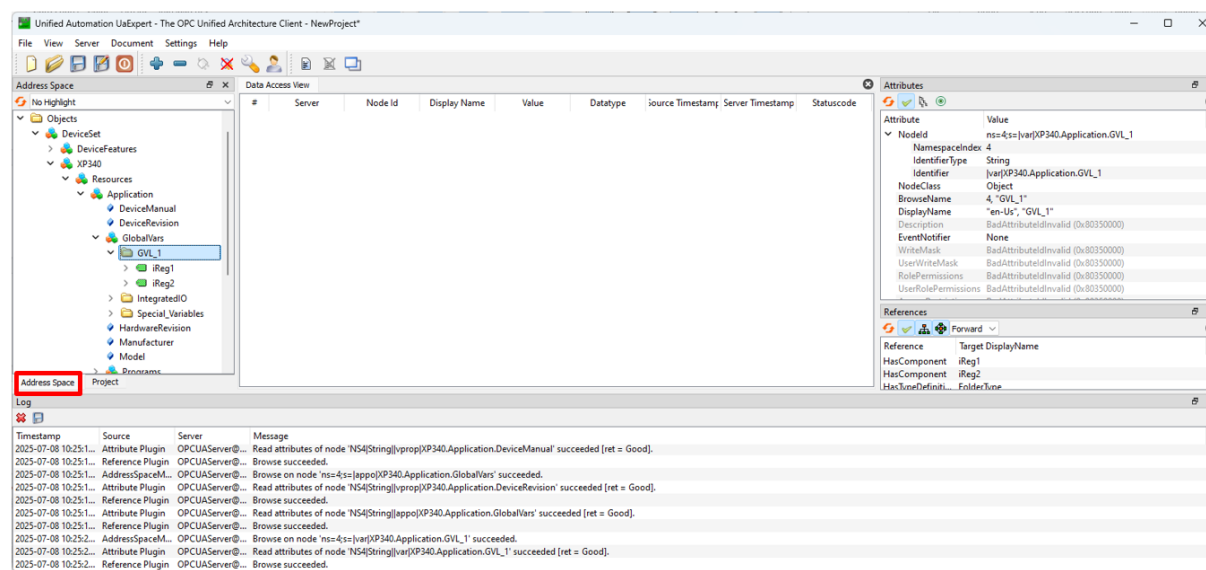


Test to read OPC UA tags from the device

UaExpert is now connected to the server in Nexto PLC.

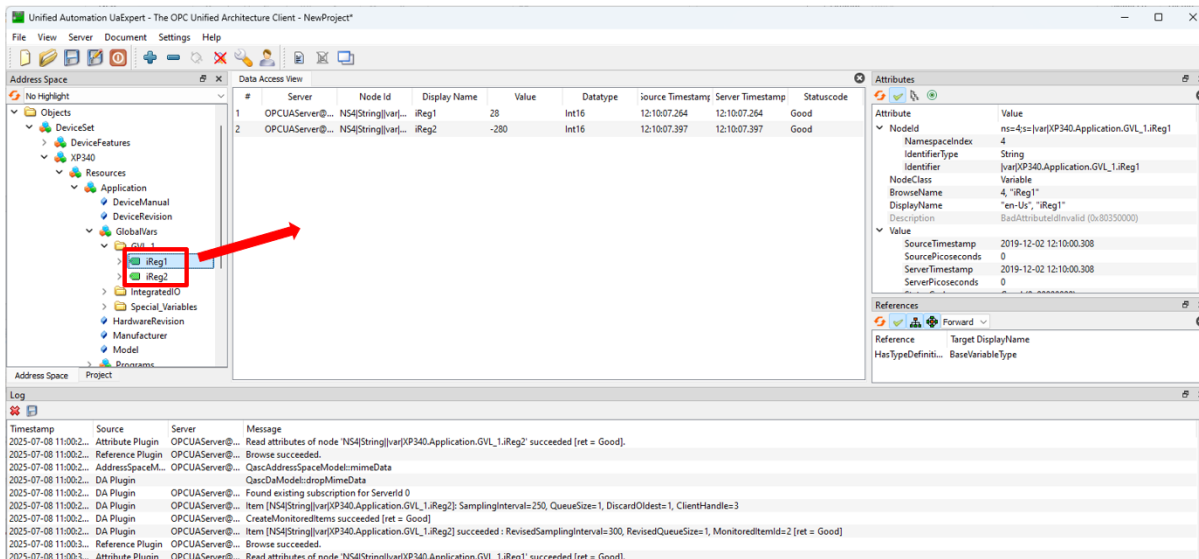


To monitor tag(s), select “Address Space”, go down in the structure to the global variable list

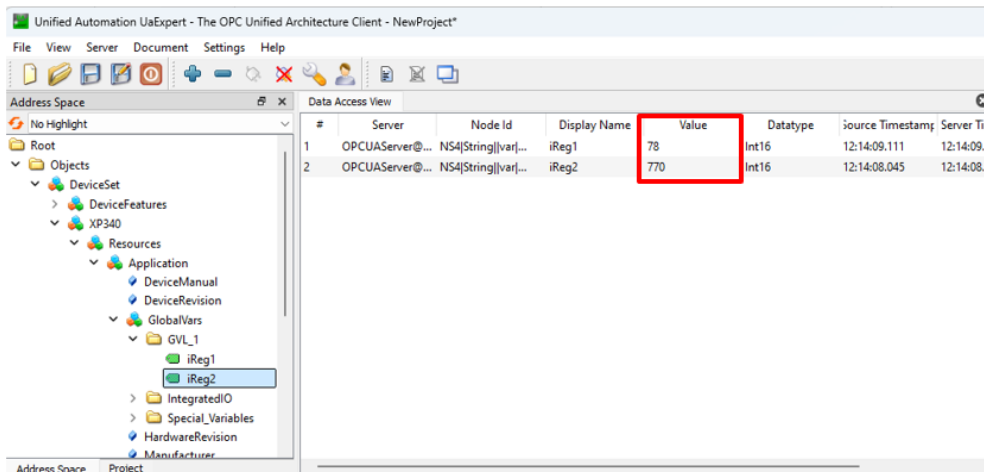


Test to read OPC UA tags from the device

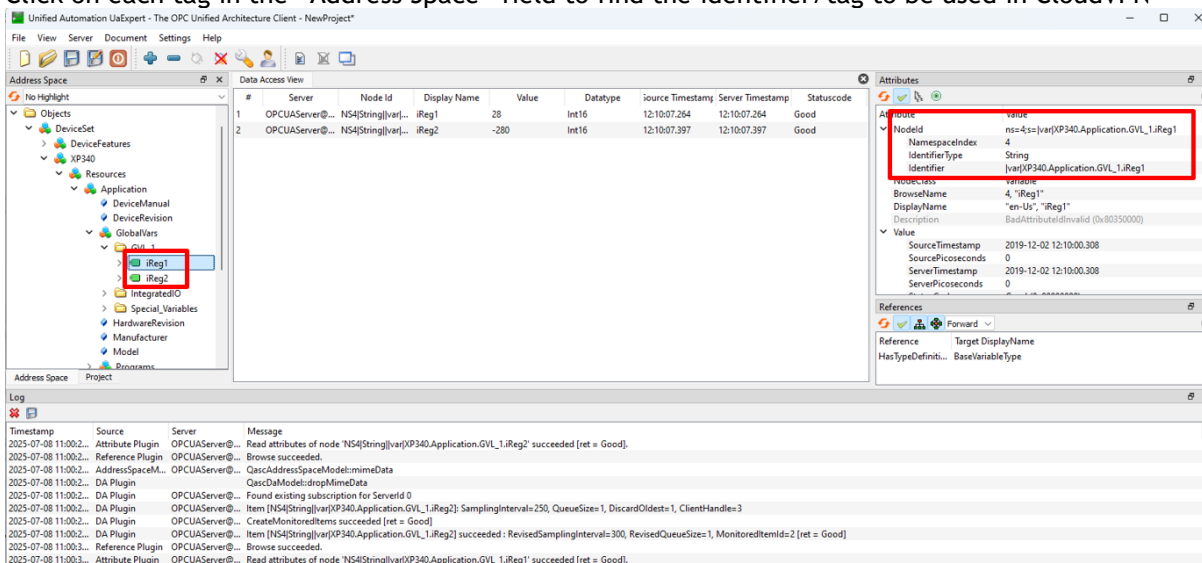
Use “drag and drop” function to move the tag(s) to “Data Access View” field.



The tags can be monitored in this view.



Click on each tag in the “Address Space” field to find the identifier/tag to be used in CloudVPN



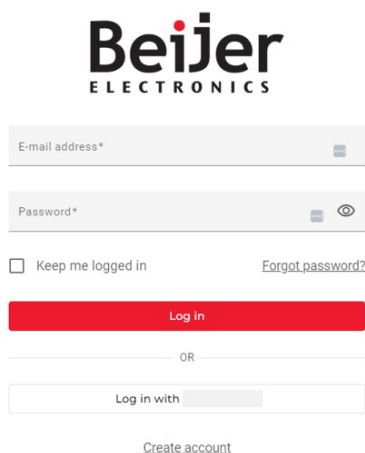
Next step is to enable MQTT in CloudVPN.

8. Enable MQTT in CloudVPN / CloudVPN SecureEdge pro

CloudVPN is used to publish data to a cloud broker, for this MQTT must be enabled and settings needs to be done to read data from the PLC.

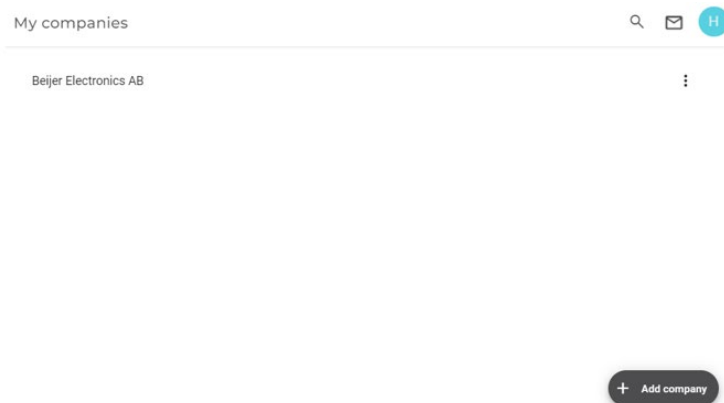
Start with login to CloudVPN portal/Cloud service using this URL: <https://cloudvpn.acirroplus.com/>

Enter your credentials and click “Log in”.



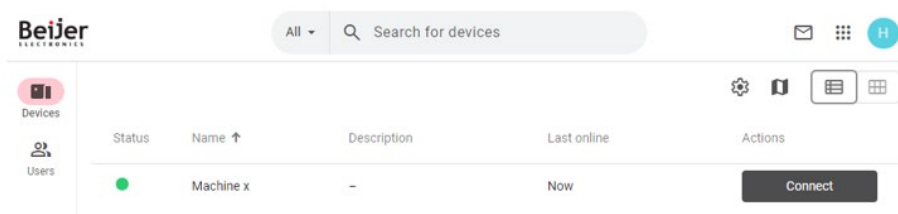
The login form for Beijer Electronics features the company logo at the top. Below it are two input fields: "E-mail address*" and "Password*", each with a small icon on the right. A checkbox labeled "Keep me logged in" is positioned to the left of a "Forgot password?" link. A prominent red "Log in" button is centered below these elements. Underneath, the text "OR" is displayed above a "Log in with" field. At the bottom of the form, there is a "Create account" link.

Click on the company name that is applicable, meaning under which company the CloudVPN that is to be accessed to is connected.



This screen shows the "My companies" section. It includes a search icon, an envelope icon, and a profile icon. A list of companies is displayed, with "Beijer Electronics AB" selected. A vertical ellipsis menu is visible to the right of the company name. At the bottom center, there is a dark button with a plus sign and the text "Add company".

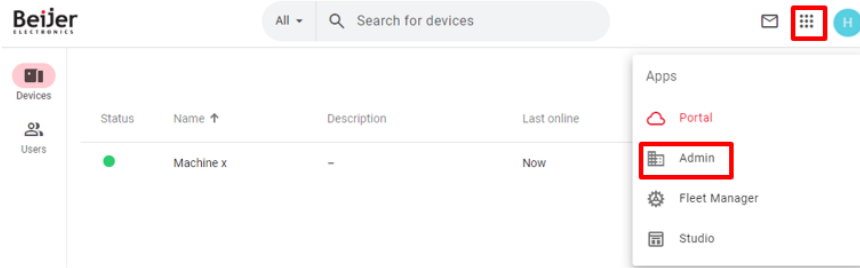
Default view after choosing company.



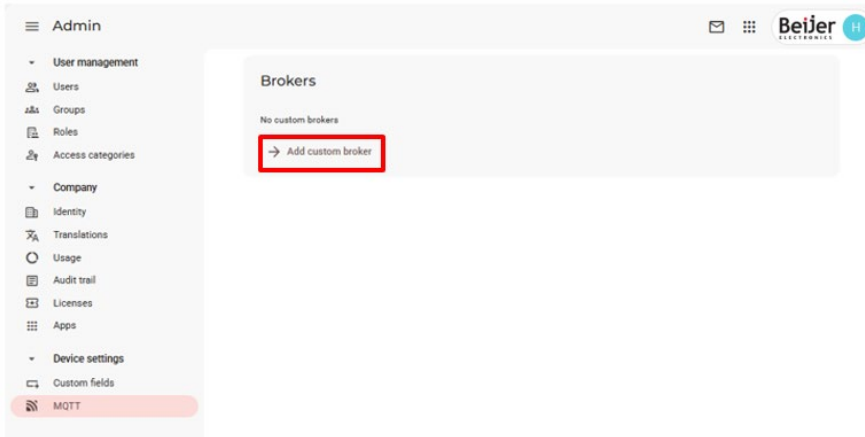
The default view after selecting a company shows the "Beijer Electronics" logo and a search bar with the text "Search for devices". A navigation sidebar on the left has "Devices" selected. The main content area displays a table with columns for "Status", "Name", "Description", "Last online", and "Actions". A single device is listed with a green status dot, the name "Machine x", a dash in the description, and "Now" for the last online time. A "Connect" button is located in the "Actions" column for this device.

| Status | Name | Description | Last online | Actions |
|--------|-----------|-------------|-------------|---------|
| ● | Machine x | - | Now | Connect |

If already logged in, click on “Apps” in upper right corner (nine dots) and select “Admin”.



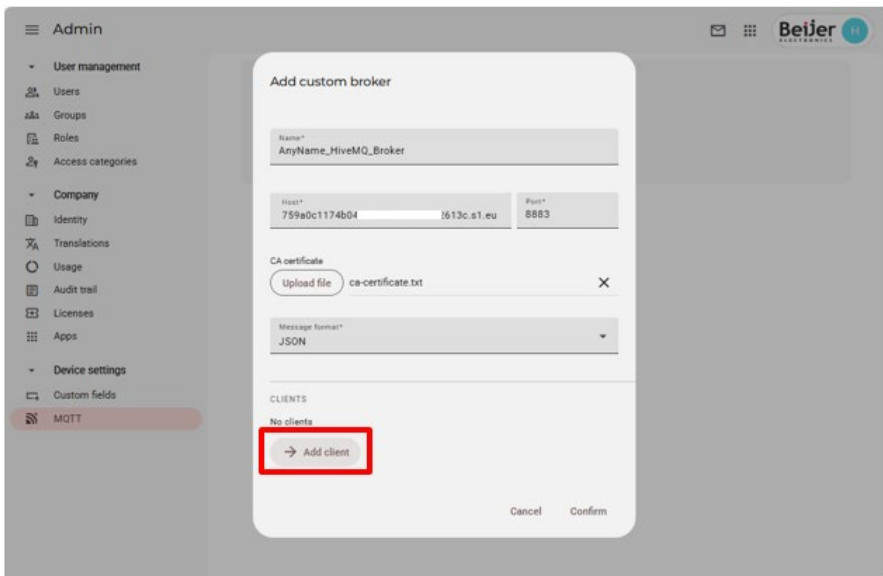
In “Admin” view, select “MQTT” bottom left. On the right side click on “Add custom broker”



Enter following:

- Preferred “Name*”, any naming
- “Host*”, same details as in the broker information
- “Port*”, same details as in the broker information
- No “CA certificate” needed
- “Message format”, in this example JSON is used

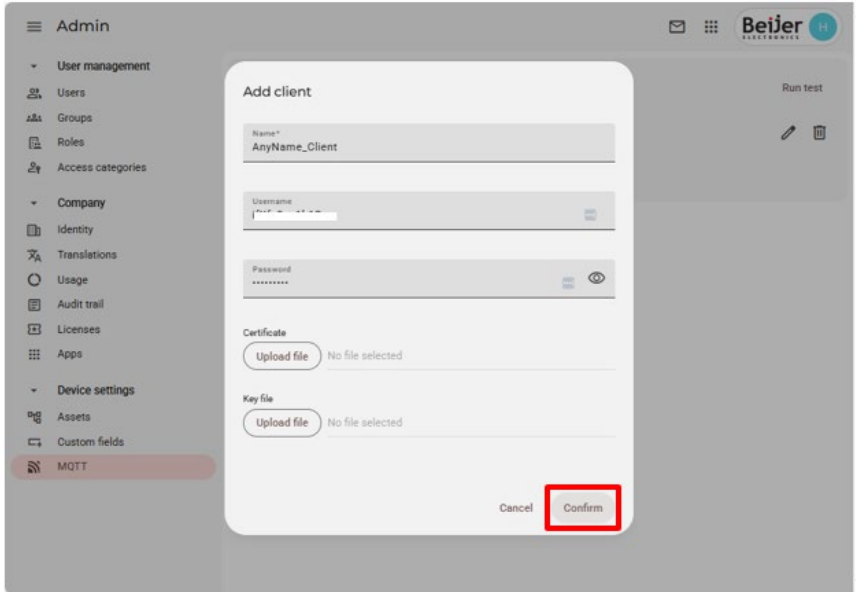
Then click on “Add client”.



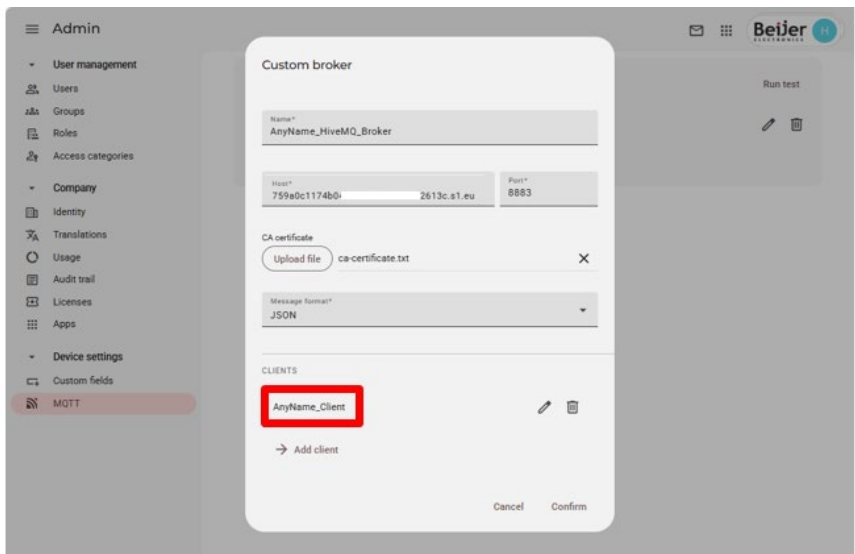
Enter following:

- Preferred "Name**"
- "Username", details are to be found in the broker information
- "Password", details are to be found in the broker
- No "certificate" or "Key file" needed

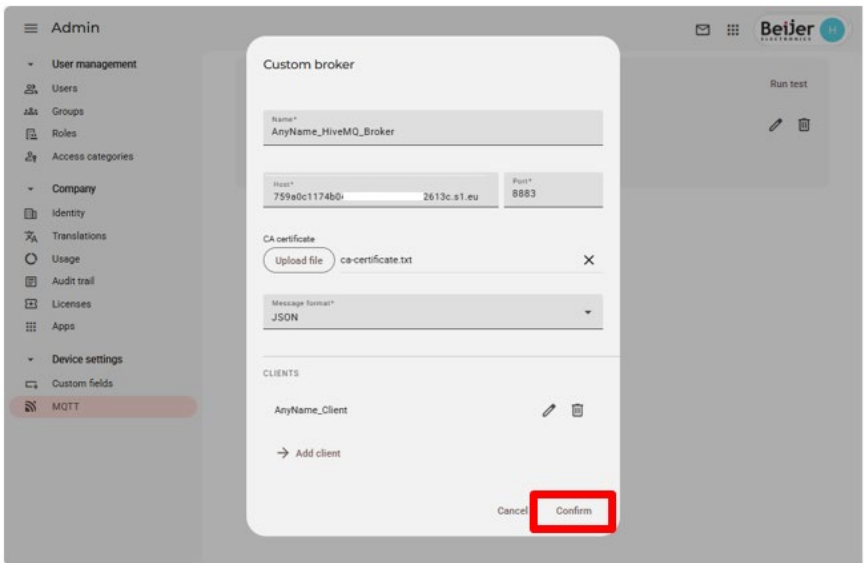
Click "Confirm" when all client information is entered.



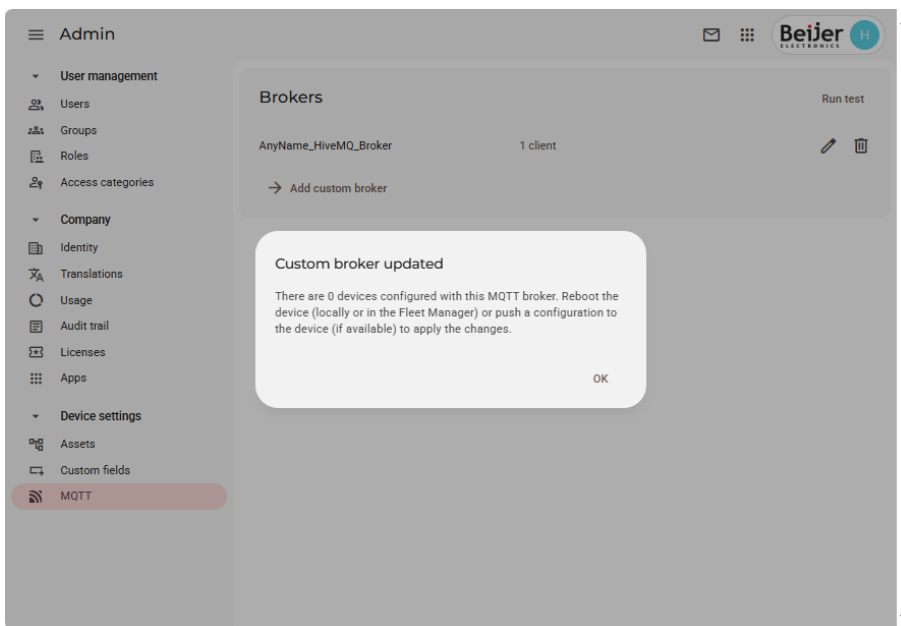
Client information added.



Click “Confirm”.



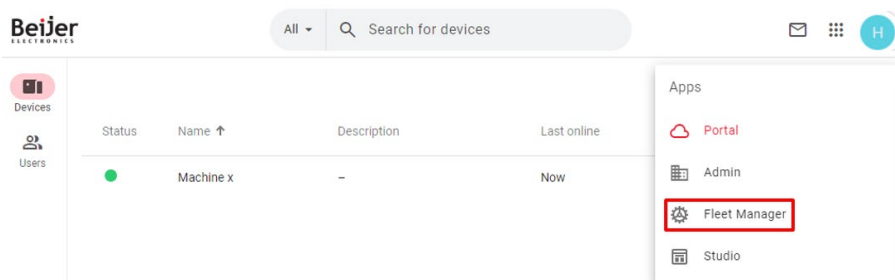
Broker information is now ready, reboot the CloudVPN or Power off/on for the settings to take effect:



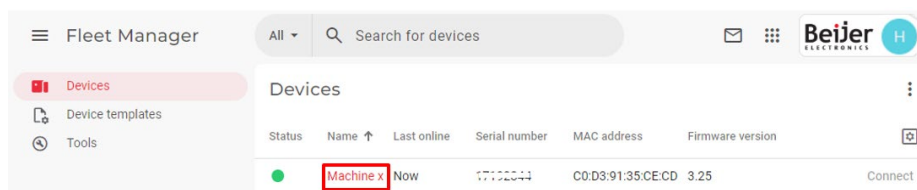
Next step is to configure tags that are to be sent to the MQTT broker.

9. Activate datasource in CloudVPN / CloudVPN SecureEdge pro

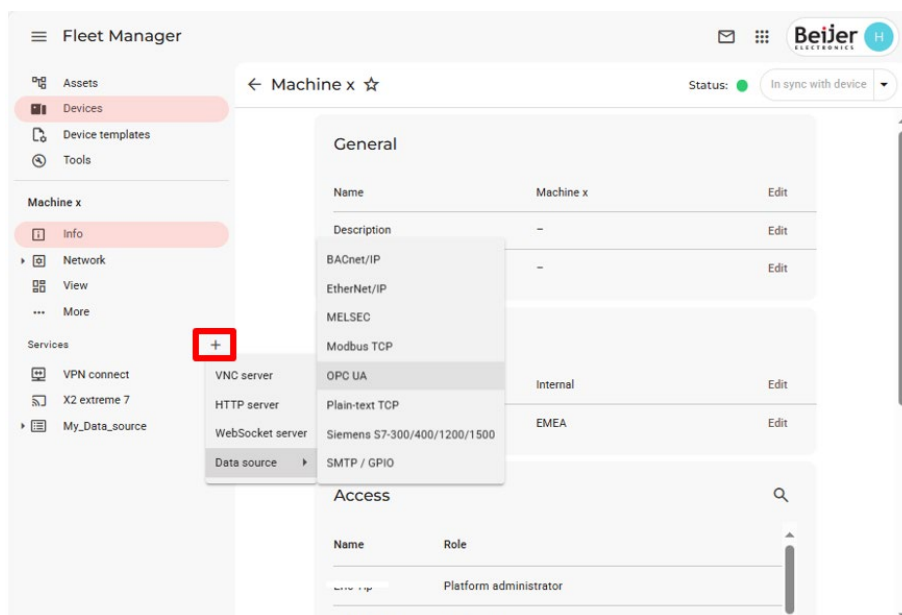
In this example we use the built in “OPC UA” driver in CloudVPN to read the tags in a Nexto PLC. Click on “Apps” in upper right corner (nine dots) and select “Fleet Manager”.



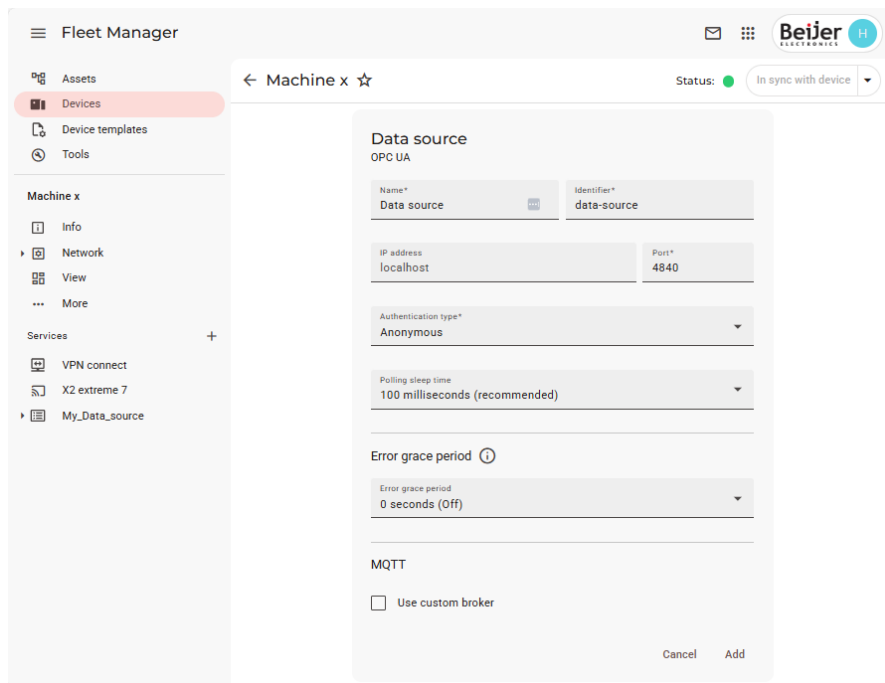
Click on the device where data source is to be added.



Click on the “+” next to “Services”, click on “Data source” and which driver, in this example “OPC UA”.



Default view.



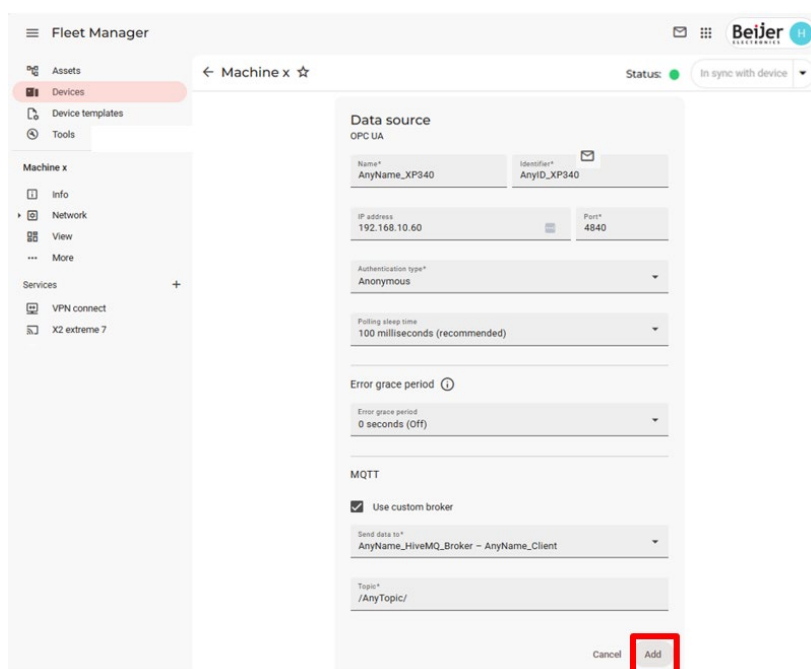
* Port number 4840 is default for OPC UA communication, must be the same in BCS Tools

Following settings needs to be done:

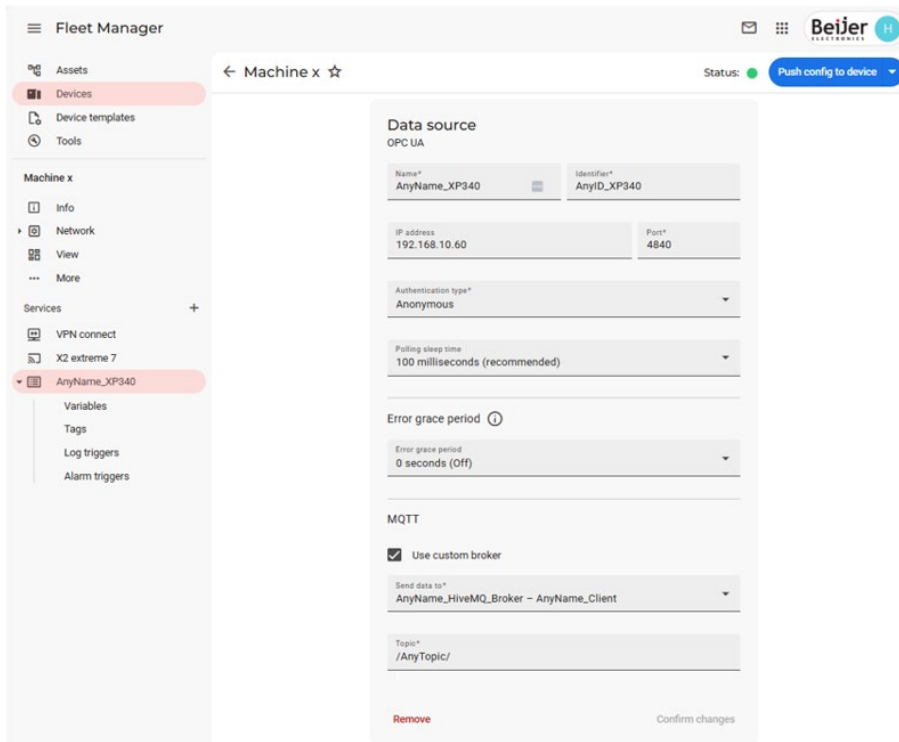
- Type preferred “Name” and “Identifier”
- Enter the controllers IP address, use default port number* (if not changed by user).
- Tic the box “Use custom broker”
- Click on the drop down menu and select the created client name (“Admin-MQTT” setting, in our case “AnyName_HiveMQ_Broker”).
- Type preferred name for “Topic” within forwards slashes.

* Port number 4840 is default for OPC UA communication, must be the same in device configuration, in this case BCS Tools.

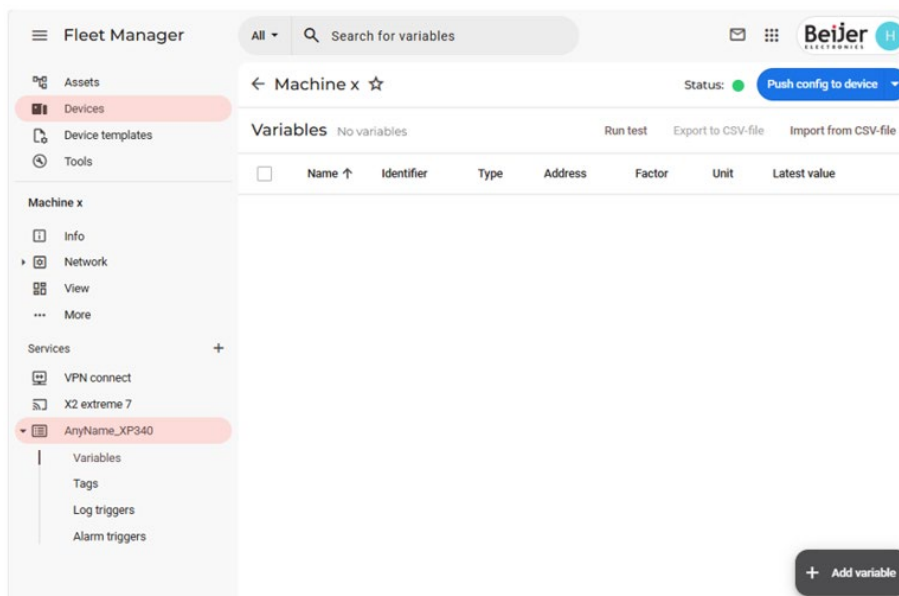
When all settings are made, click “Add”.



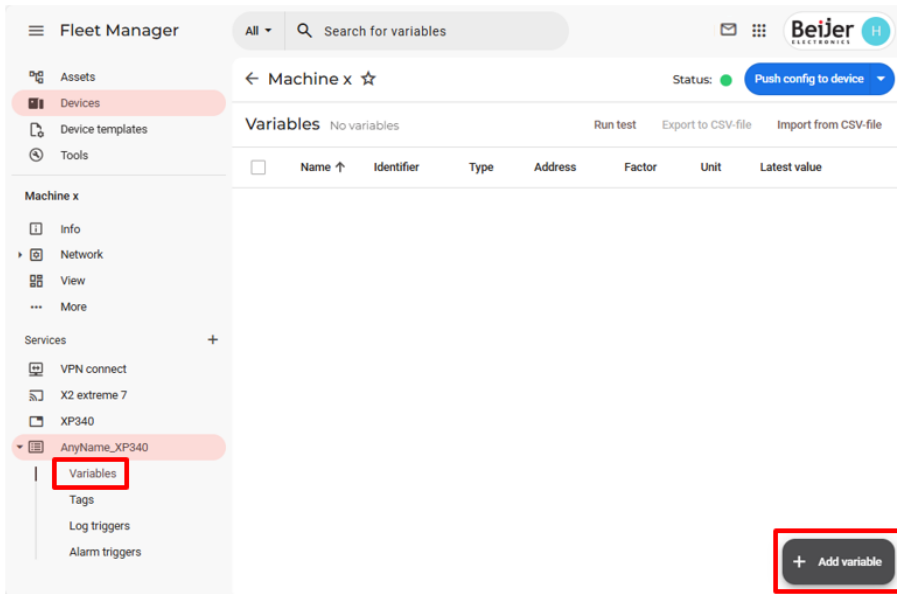
View after adding data source:



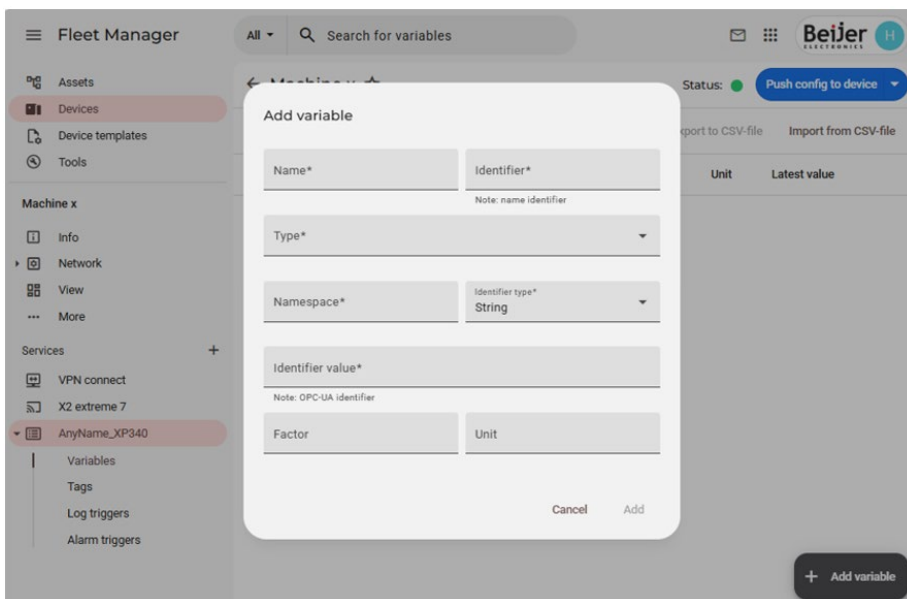
Next step is to enter the variable(s), click on “Variables” under the created data source. Default view, variables can either be imported using a CSV file or entered manually.



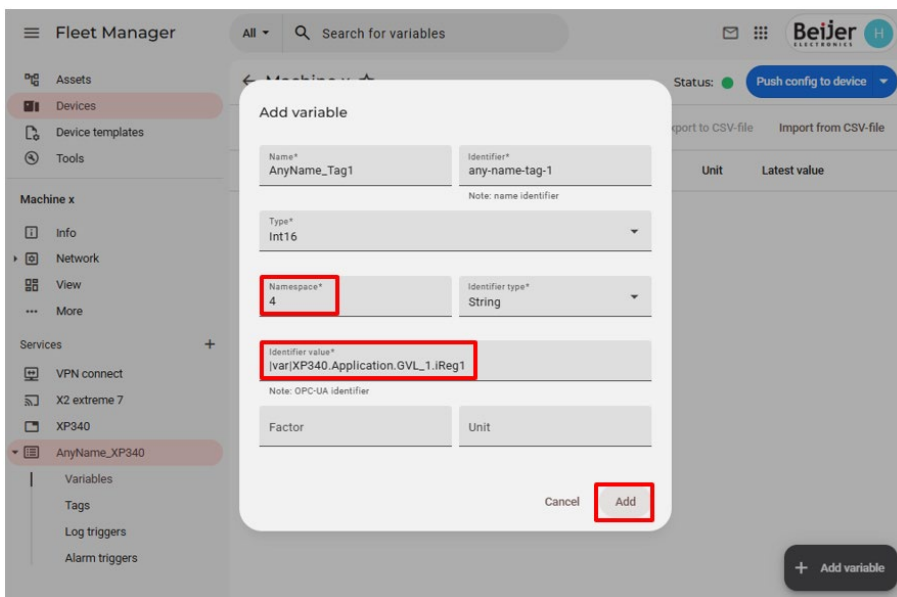
In this example variables are entered manually, click “+ Add variable”.



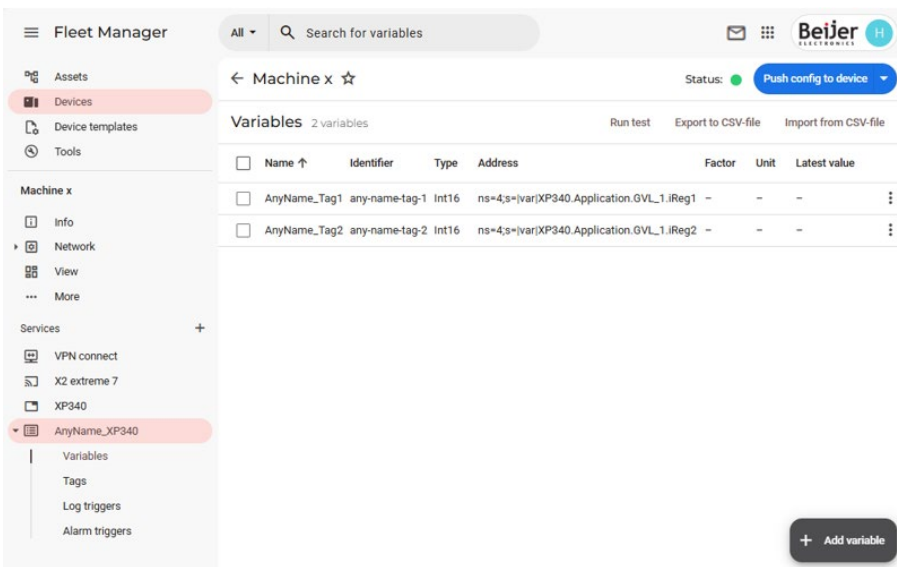
“Add variable” default view



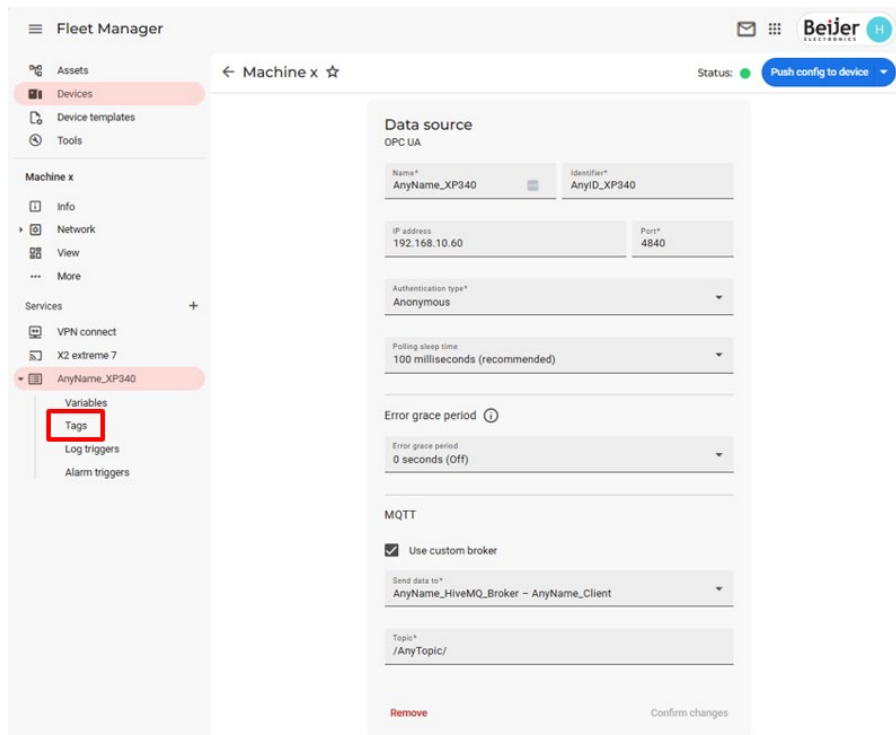
Enter name and identifier of the variable, enter type, namespace and identifier value that was read from the device using UA Expert, click “Add” .



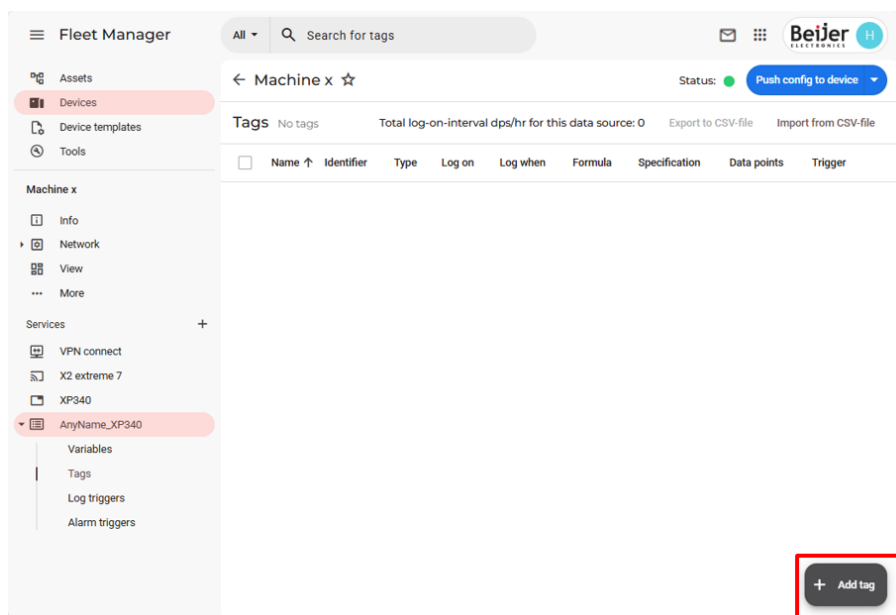
All variables in this example are done.



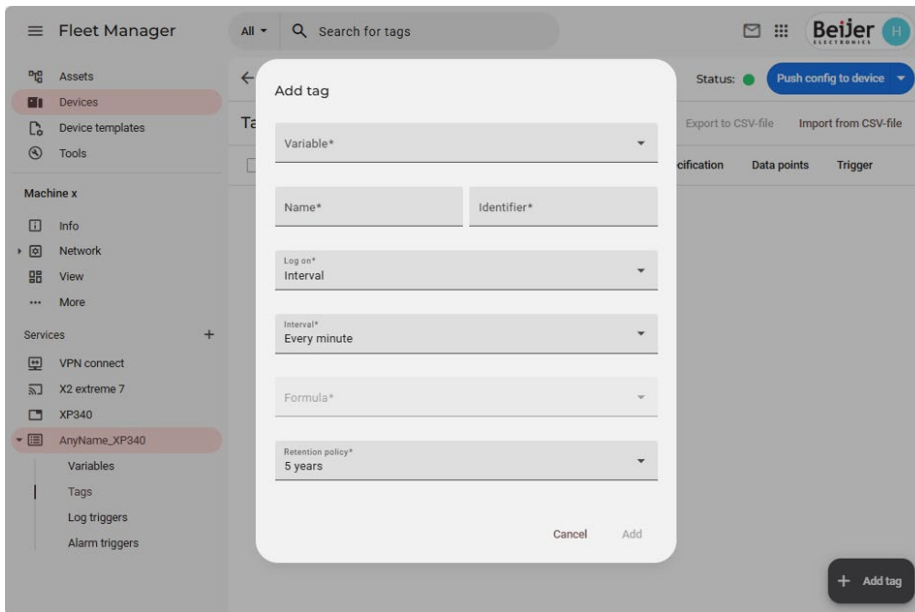
Next step is to enter the tag(s), click on “Tags” under the created data source.



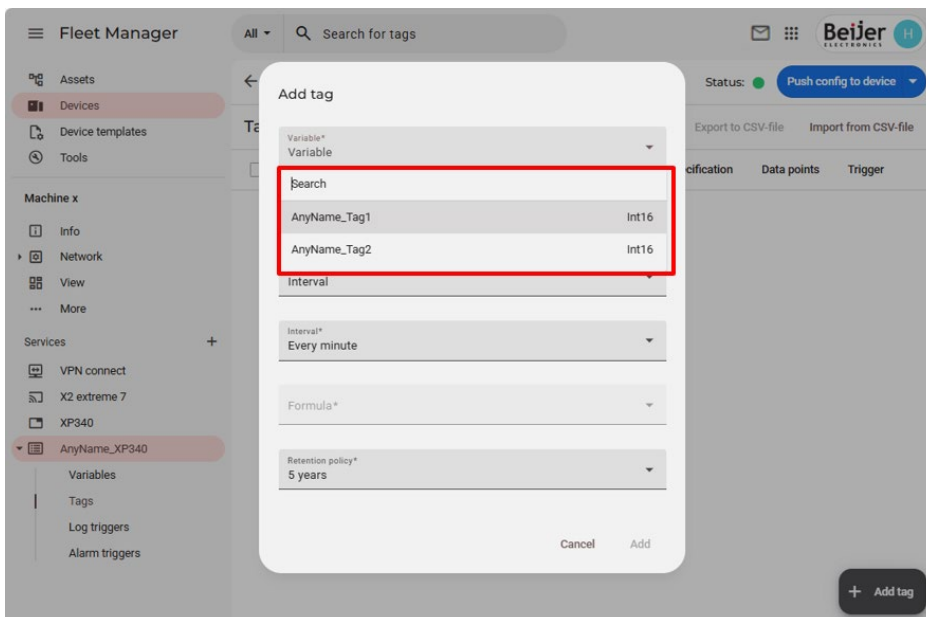
“Tags” default view, click ”+Add tag”.



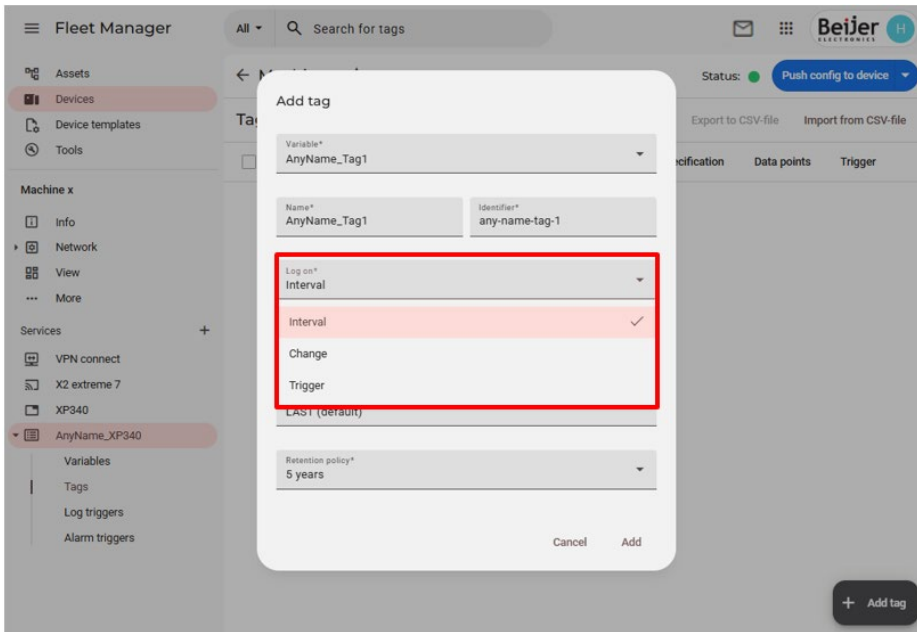
“Add tag” default view



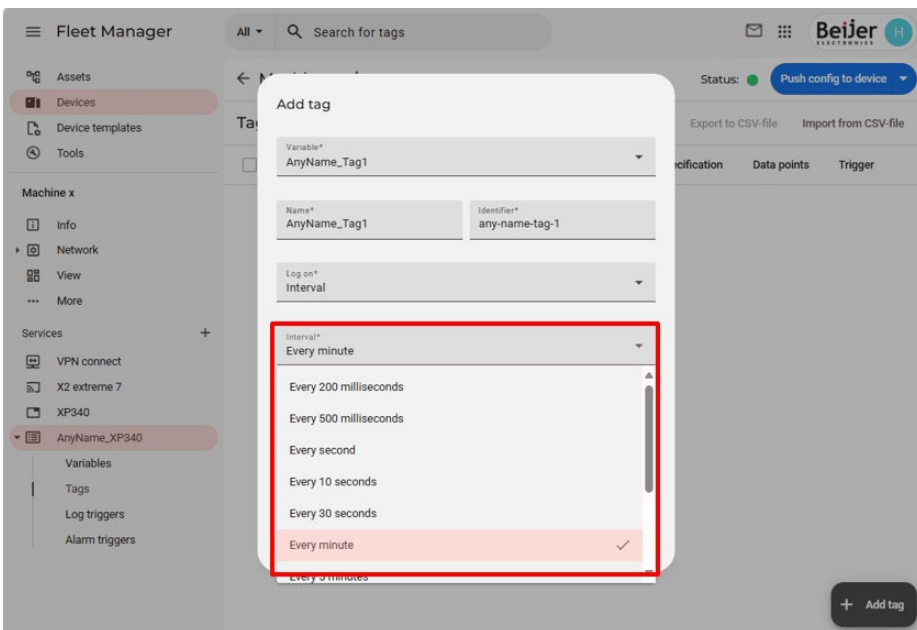
Use the drop down menu under “Variable*” and select created variables.



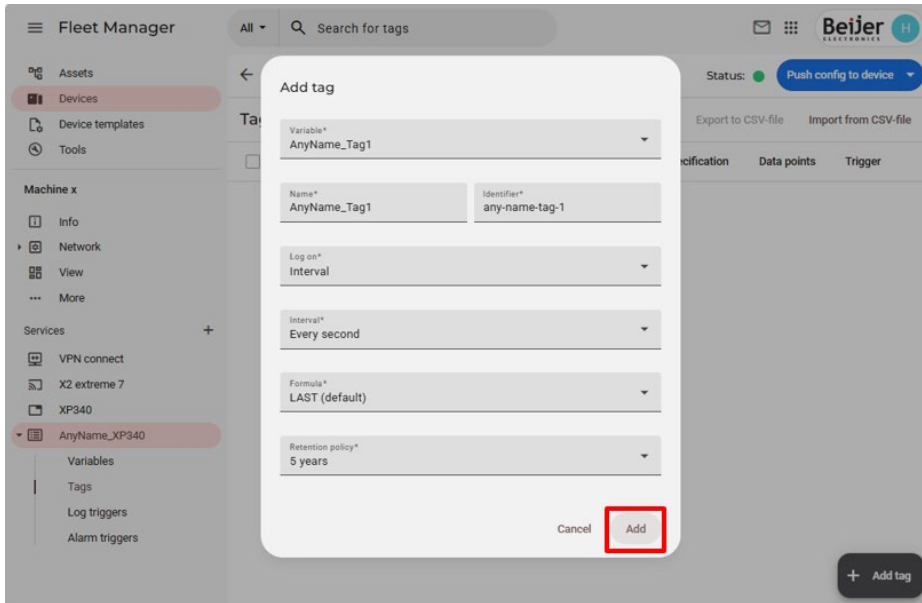
Use the drop down boxes to select when logging should be done.



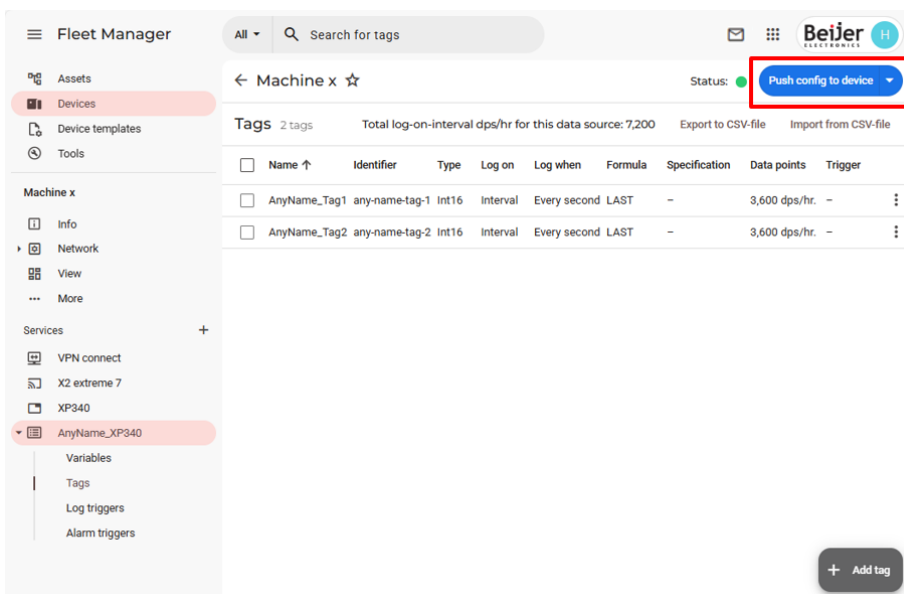
Use the drop down box to select how often data logging should be done.



When all settings are done, click “Add”.



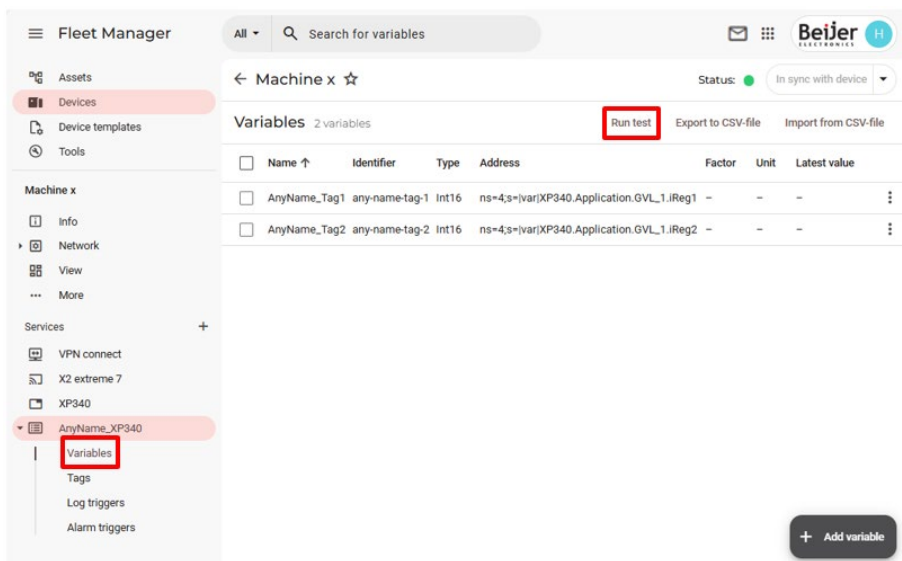
When ready click on “Push config to device”.



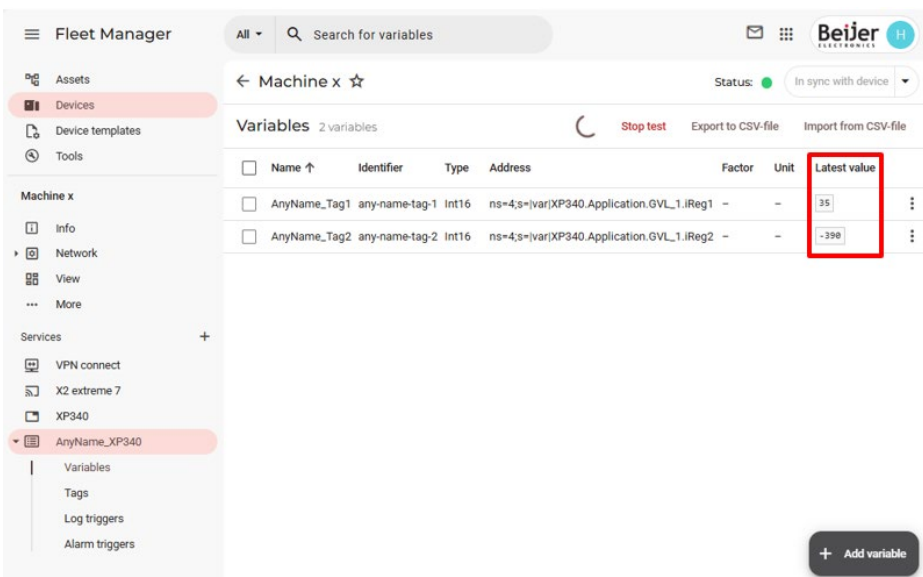
NOTE

CloudVPN must be rebooted or powered off/on for the changes to take effect.

To test the OPC UA communication between the CloudVPN and device (PLC), click on “Variables” under the created data source, then click on “Run test”.



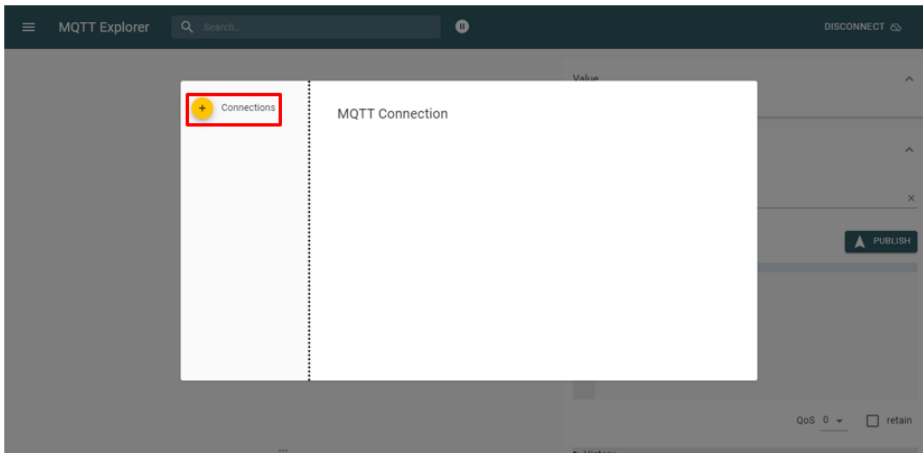
Latest value should now be presented.



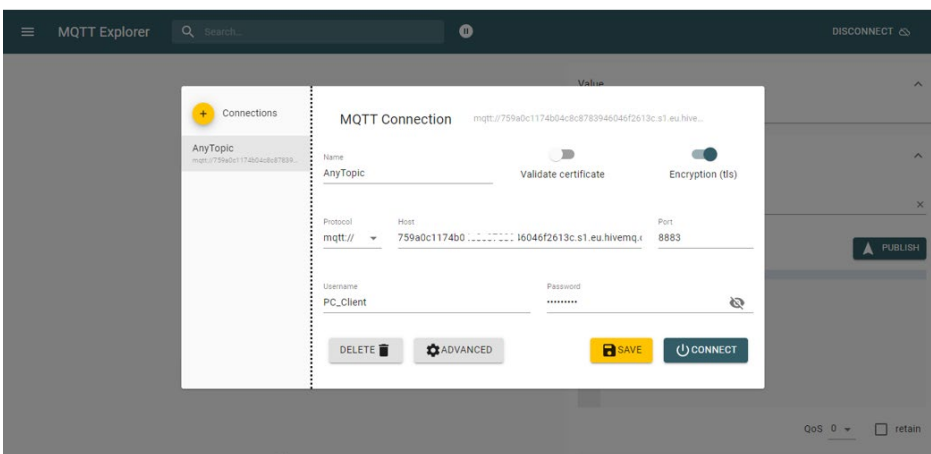
Next step is to enable communication between broker and client.

10. Subscribe data from the MQTT broker

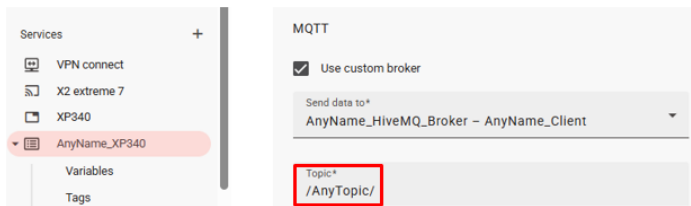
To test the communication between the broker and a client, MQTT Explorer (0.6.0-beta.6) is used. Install and start MQTT Explorer, click on “+ Connections”



Enter the credentials in MQTT Explorer accordingly.

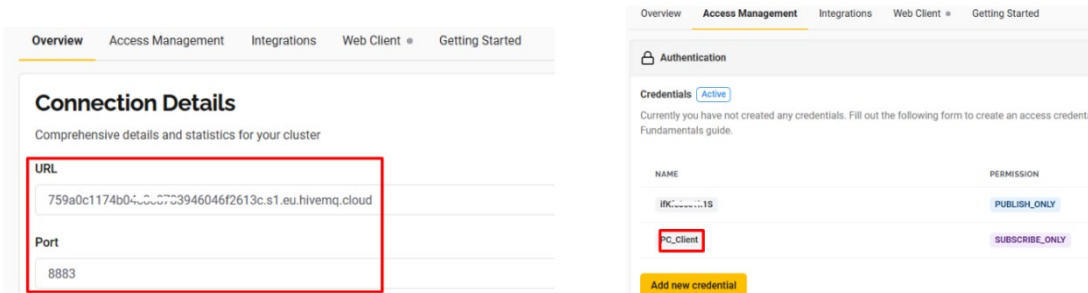


Name: Use the same name as given in “Topic” in CloudVPN



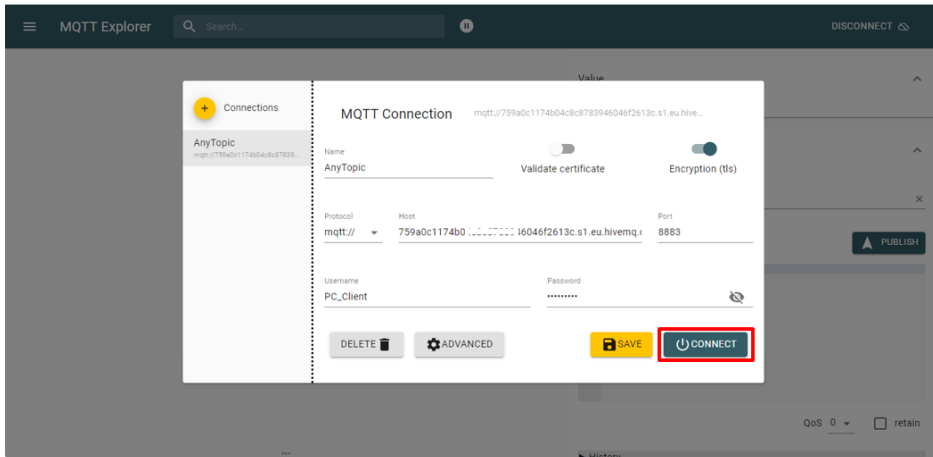
Protocol: select mqtt://

Host, Port, Username and Password: Use the credentials from HiveMQ

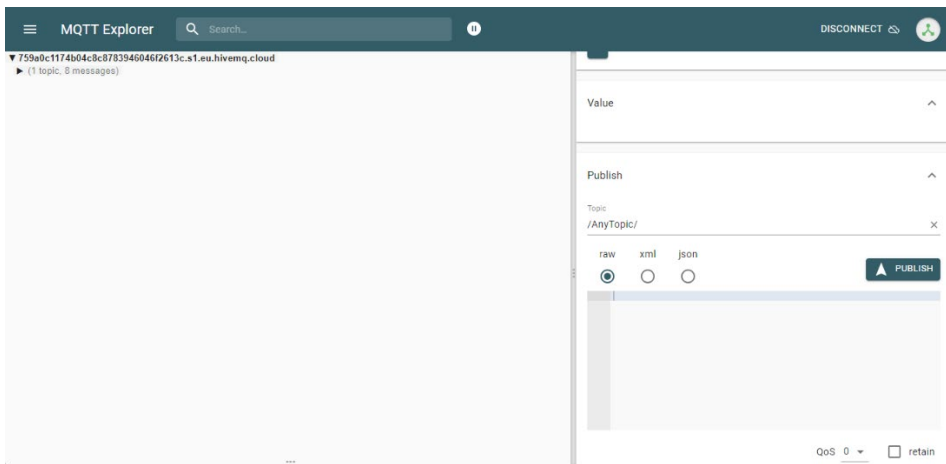


Subscribe data from the MQTT broker

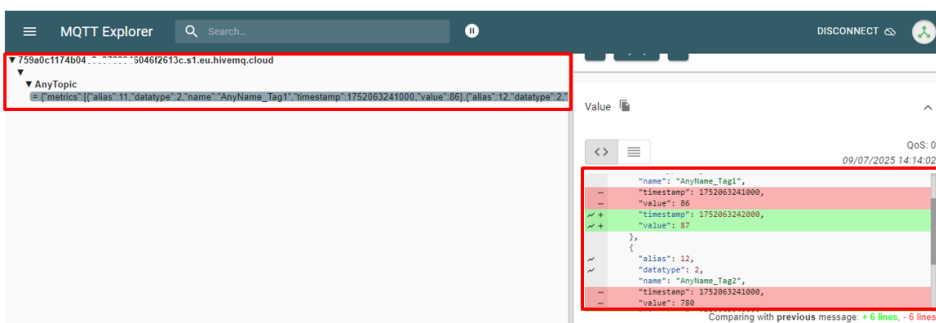
Click on “Connect”.



MQTT Explorer connected to MQTT Broker.



Expand the tree to see the tag values.



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