Adroit Technologies

Adroit Edge Gateway

OPC UA Microservice

OPC UA

Adroit
Edge Gateway

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Version	Date	Author	Comment	Approval
1.0	25.02.2025	M. Lamusse	Draft	
2.0	19.08.2025	D. Wibberley	Final	

Contents

1. Introduction

The OPC UA Publisher is a Microservice that enables the Adroit Edge Gateway to be used as an OPC Server. The OPC UA Server encapsulates the OPC Foundation's OPC UA Server library.

Matrikon's OPC UA Explorer can be downloaded from: https://www.matrikonopc.com/opc-ua/products/opc-ua-explorer.aspx for use as an OPC UA client for test purposes.

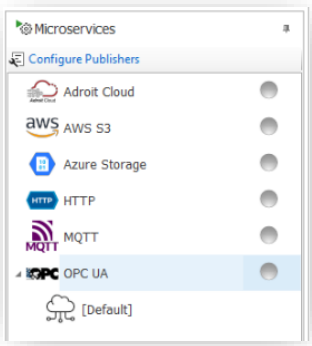
2. Configuration and Usage

Configuration of all Adroit Edge Publishers are done in the **Config Editor** under: **Configuration** -> **Welcome** -> **Edge Gateway Configuration**.

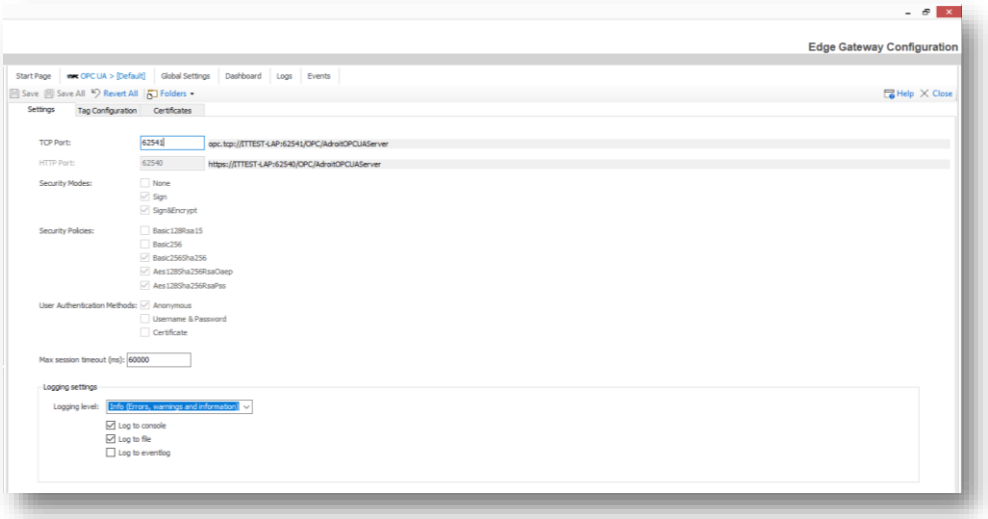
Once inside, the Microservices docking panel will display all available Edge Microservices in a treeview. To create an OPC UA connection:

1. Right-click the **OPC UA** Microservice in the treeview.
2. Select the option to create a new OPC UA Server connection name.

The OPC UA Microservice contains a single (and only) instance called "Default".



Double-Clicking the OPC UA Publisher in this panel presents you with OPC UA configuration containing 3 tabs:

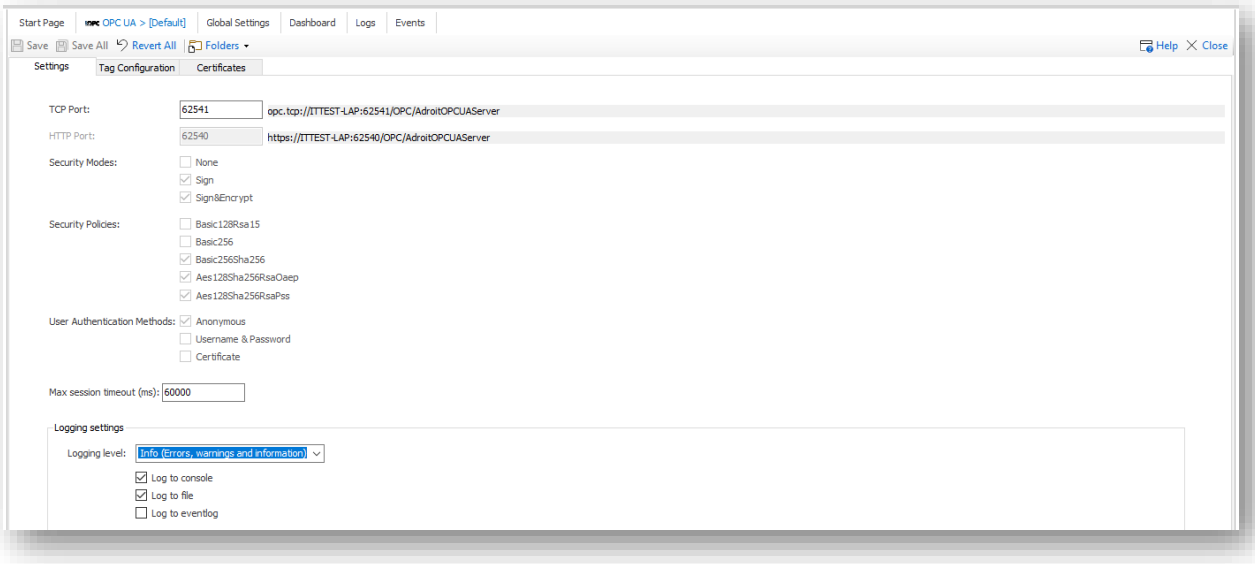


These tabs are:

Tab	Description
Settings	General settings for the OPC UA Server
Tag Configuration	Configuration of Tag to be exposed by the OPC UA Server
Certificates	Optional configuration of certificates required for secure access to the OPC UA Server

2.1. Settings

The "Settings" tab allows you to configure operating parameters for the OPC UA Server.



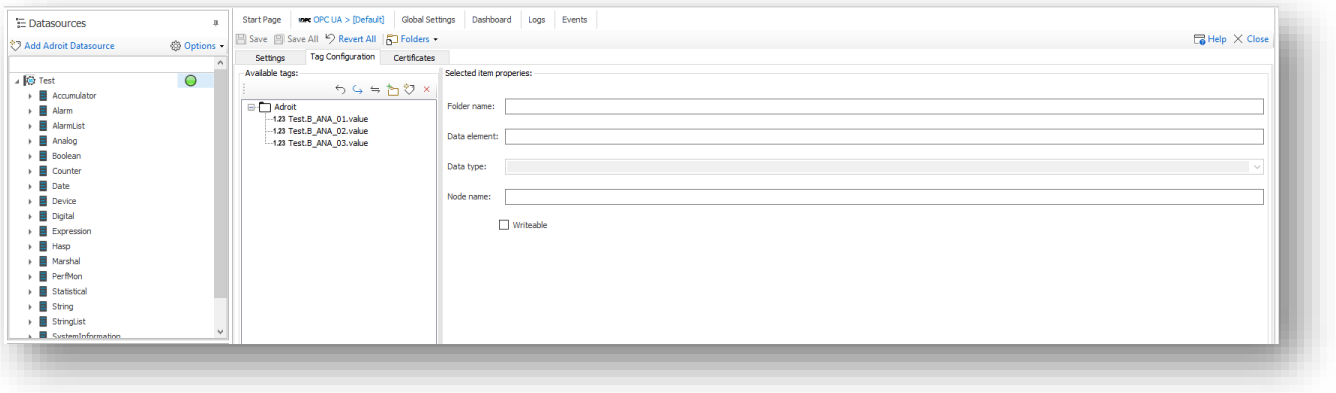
The available settings are:

TCP Port	The TCP port at which the OPC UA Server will listen for incoming client TCP/IP connections. The default is port 62541. The onus remains upon you to ensure that access to the PC and port upon which the OPC UA servers is accessible via firewalls, where necessary.
HTTP Port	Not supported in the current.
Max session timeout	The number of seconds to wait before closing a channel when an OPC UA client seems to have disconnected unexpectedly. The default is 60000 ms.
Security Modes	Enable at least one or more security modes
Security Policies	Enable at least one or more security policies
User Authentication Methods	Enable at least one or more authentication methods
Logging settings	Level of logging – can be set to either None, Errors, Warnings or Info
Log to console	Will log events to the console window. This is only of any use when the OPC UA Server is run manually as an application as provided for by the "Test OPC UA Server" button. When the OPC UA Server is run as a Microservice from the Microservices tab, there is no access to the console
Log to file	Will log events to the opcua.log file as discussed in Storage above. This file must be opened manually by the user, if required.
Log to EventLog	Will log event to the Windows EventLog subsystem. These events are visible in the global Events tab.

Any changes to the above settings must be saved and the OPC UA Server restarted to recognize these changes. Changes to log settings will be recognized by the running OPC UA Server instance within 30 seconds of saving.

2.2. Tag Configuration

The "Tag Configuration" tab allows you to select Dataelements to be exposed by the OPC UA Server.



The OPC UA Server allows for a single level of folders. Tags to be exposed may reside in any single folder. Folders may be created/deleted at will using the buttons provided. Care must be taken not to name any two folders the same.

Tags may be dragged from the global "Datasources" panel into the "Available tags" tree. Tags may also be added/deleted manually using the buttons provided.
The tag configuration can be imported/exported using the buttons provided. Tags will be exported to the opcua.csv file as discussed above. This file can then be edited by the user, saved and the import button can be used to import the same file.

Tags can be moved up and down within a folder using the buttons provided. Tags can also be moved to different folders, if required by simply selecting the tag/s and dragging to the new folder.
When a folder is selected in the tree, the folder can be renamed in the right-hand panel using the "Folder name" edit box.

When a tag is selected in the tree, the tag properties (Dataelement name, node name and writeable) can be edited in the right-hand panel.
Any changes must be saved and will be recognized by a running OPC UA Server within 30 secs of saving them.

2.3. Certificates

The Adroit OPC UA Server supports the following user tokens:

1. Anonymous user token
2. *Specified username token – not supported in the current version*
3. *Certificate token – not supported in the current version*

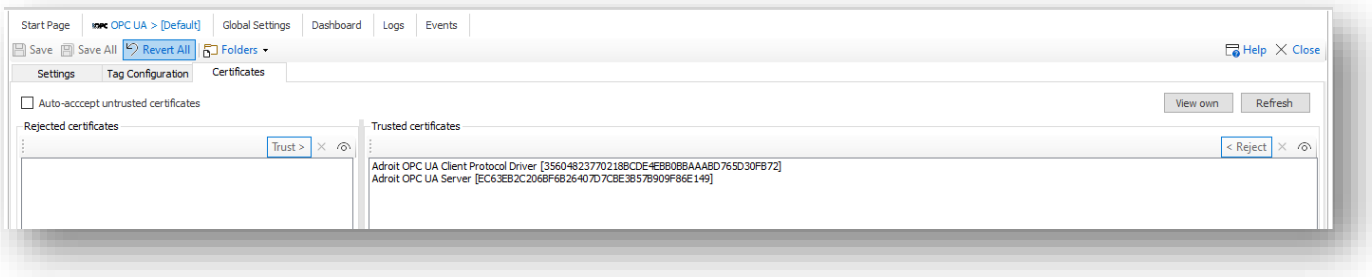
All tokens support 3 security modes:

- None – no certificates required
- Sign - requires OPC UA client certificate to be trusted
- Sign & Encrypt - requires OPC UA client certificate to be trusted
- *Username token – not supported in the current version*
- *Certificate token – not supported in the current version*

Each of the above security modes supports the following security policies:

- None
- Basic128Rsa15
- Basic256
- Basic256Sha256
- Aes128_Sha256_RsaOaep
- Aes256_Sha256_RsaPss

The "Certificates" tab allows you to view the OPC UA Server's own certificate, as well as trusted and rejected client certificates.



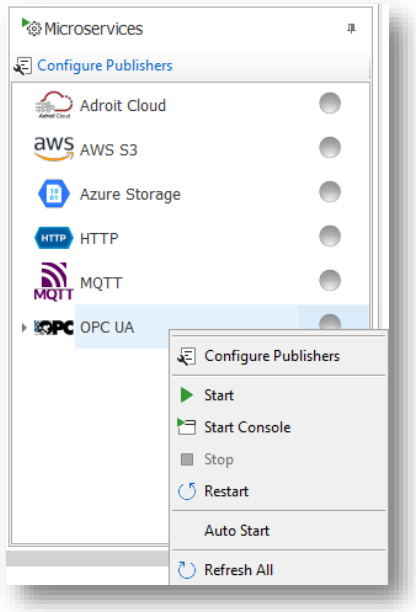
Rejected certificates may be individually selected and trusted before the respective OPC UA client application will be allowed access to the OPC UA server.

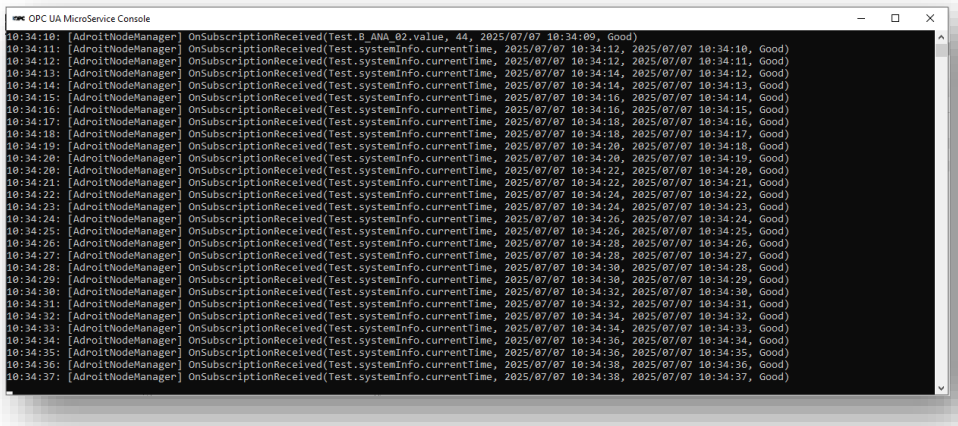
Trusted certificates may be individually selected and rejected to disallow the respective OPC UA client application access to the OPC UA server.
The "Auto-accept untrusted certificates" should be used with care if you do not want to allow unauthorized access.

Rejected and Trusted certificates may be deleted as required.

2.4. Testing the OPC UA Server

The OPC UA context-sensitive menu item "Start Console" can be used to launch a console version of the OPC UA Server.





This will display a console window where events will be displayed to show the underlying activity.

2.5. Starting the OPC UA Server as a service

For final deployment, the OPC UA context-sensitive menu item "Start" can be used to launch the OPC UA Server as a service.

2.6. OPC UA Server Browser

The "Start OPC UA Browser" button (bottom left corner on the "Tag Configuration" tab) can be used to launch the supplied "opcuabrowser.exe" OPC UA client utility to view configured tags.

2.7. Work Folder Location

Configuration files for the OPCUA Server exist within the folder:
C:\ProgramData\Adroit Technologies\SmartDataServices\OPCUA folder.

There is generally no need for users to access these folders and files directly (except where indicated), as all functionality to edit and maintain these files are provided from within the Config Editor.

The files include:

config.xml	Contains all settings and tag configurations
opcuatoolkitconfig.xml	Contains all settings required for the underlying OPC UA Server library
opcua.log	Exists only if "Log to file" is enabled. This file needs to be opened manually by the user.

The **C:\ProgramData\Adroit Technologies\SmartDataServices\OPCUA\CSV** folder contains a file called opcua.csv that is created and displayed after exporting the tag configuration. This file can be opened manually and edited by the user. The import tool will use the same file.

The **C:\ProgramData\Adroit Technologies\SmartDataServices\OPCUA\PKI** folder contains sub-folders, and all server and client certificates required for secure operation.

3. Troubleshooting

Common OPC UA error codes can be found at https://www.opcti.com/common-error-codes.aspx