Connect Kepware OPC UA Client to FactoryStudio

System Requirements

To make use of this feature, the following system requirements need to be matched.

- KepServerEx V5 (or superior).
- OPC UA Protocol

How to Use

The procedure for a successful OPC UA connection is divided into three main steps.

- KepServerEx OPC UA Client Certification
- Creating certificates for the OPC Server
- Kepware OPC Client Configuration

KepServerEx Client Certificate

In the Kepware OPC UA Configuration Manager, navigate to Instance Certificates (1). In the Client Certificate portion, click on Export Client Driver Certificate (2), and save the file in any folder you want.

🐔 opo	UA Conf	iguration Mana	ger				1		\times
Server I	Endpoints	Trusted Clients	Discovery Servers	Trustee	d Servers	Instance Certificate	es 📕		
Serv	er								
	View server certificate				Generated by Luiz Otavio@LuizOtavio.tatsoft.com on 2021-02-04T16:02:05.033 using OpenSSL 1.1.1d-1				
	Export server certificate				Sep 2019				
		Reissue o	ertificate						
		Import ce	ertificate						
Clier	t Driver								
		View client driv	er certificate		Generate 2021-02	ed by Luiz Otavio@Lu -04T16:02:27.812 usi	uizOtavio.tatso ing OpenSSL	oft.com on 1.1.1d-1 10	
	Export client driver certificate				Sep 2019				
	Reissue certificate				Ζ				
		Import ce	ertificate						
Note: Ser	rver Runtin	ne reinitialization i	s required to utilize	changes.		[Close	Ajuda	

OPC UA Server Configuration

In your Engineering Environment, go to the Info > Settings tab, and look for the OPC Server Runtime configuration. Select OPC UA, and click on Settings (1).

You should see an application called UA Server Configuration Helper opening up. Click on Browse (2) and search for the file .. fs-9.1uaPLUS.Net4.exe. Then, click on Create UA Configuration (3) followed by Edit UA Configuration (4)

OPCUA-Configuration		2_Kepware 🤤 🤯 🦊 🥳 U	A Server Configuration Helper	(c) Advosol Inc.	- 1	X
Edit Draw Run Info	Version Settings Redundancy	Servi UA C	er Application C. Ween Las Otavio Desktop onfig File C. Ween Las Otavio Desktop	tabaha ta 11 jilan internal atau katan data yaka Ya-9.1 wa	PLUS.Net4.exe PLUS.Net4.Ua.Config.Xml	Browse
Project	Product: FactoryStudio ProjectPath: CAFactoryStudio\Projectsv9A Family: Express		3 Create UA Configuration Check UA Configuration	Create an UA Configuration File with default settings for the app Check if the UA configuration file exists for the application with	plication. the proper name.	2
Track	Model: 500 💌 Culture Info: Português (Brisii) 💌 Default Code : SSharp 💌	Force 32-bit	Firewall Exceptions	Ean the Sening in the On Configuration AML the Manage the Frewall Settings for this Application Grant Permissions for Servers with HTTP Endpoints		Done
FactoryStudio	Target Layout site (on Edit Displays Layouts) Width: 156 • Height: 768 •	Default Size when creating new Pages Width: 1366 • Height: 728 •				
<table-of-contents> license</table-of-contents>	Run Motoles inside main Runtime process	OPC-Server Runtime OPC-DA OPC-UA Settings Python	1		textit{OPC	UA} and cl
FactoryStudio fs-9.1.9	AD//DAP Server:	Interpreter: C\Program Files\Python36\pyth	non.exe		r (DPC UA CLie
TATSOFT	Find window	OnlineCor	nfig disconnected	Copj	yright by Tatsoft	

The *Edit UA Configuration* page is where the OPC UA Server properties are configured, such as *Endpoint (1), Security Policies (2),* and *certifications (Client and Server) (3).*

.

to UA Configuration	uaPLUS.Net4.Ua.Config.Xml — 🗆 🗙		
		😽 Manage Certificates	- 🗆 ×
Application Name	Advosol uaPLUS Server	Server Certicate Configuration	
Application URI	um:LUIZOTAVIO:UA:Advosol:uaPLUS	Server Certificate	Server certificates are in the
Product URI	uri:advosol.com:Advosol:uaPLUS	FS OPCServer	certificate store configured for application certificates.
Base Addresses		Browse Show Permissions	Export The certificate is exported with only the public to the file: name [thumbprint].der
opc.tcp://LUIZOTAVIO:a	10-62841/Advosol/uaPLUS 1	Create a new self signed server certificate Friendly Name FS_OPCServer Machine Name LUIZOTAVIO 5	Create The created certificate is stored in the certificate store and is exported with only the public key to the file: name (thumbprint) der The certificate with the private key is added to the certificate store
unsecured Basic128rsa1 Basiuc256	I5	Client Cettificate Import a Client Cettificate The certificate store The cettificate The cettificate	configured for the application. is imported ffrom a .DER file and added to the ± configured for trusted peers certificate. is moved from the configured Rejected Certificate
3 Certificates	Anonymous User Name Certificate Manage the Application Certificate. Certificates can be imported or created. Import Server Certificates.	Browse the Certificate Store	Usted Certificates store.
Trace Configuration Output File uaPL Trace Mask 513	US log bt Change Delete On Load Save Save and Close Cancel		

In the certificate popup, click on Import a Client Certificate (4) and browse for the Kepware Client Certificate. Then, Create a new self signed server certificate (5), give it a friendly name, and click on Create.

Finally, click on Export (6) to save the Server Certificate. Click on OK > Save And Close > Done

KepServerEx Configuration

In the KepServerEX Configuration display, right-click on Connectivity and select New Channel. From the Channel Wizard popup, browse for the OPC UA Client.

[Connected to Runtime] - KEPServerEX 6 Configuration			- 🗆 X
File Edit View Tools Runtime Help			
🗋 🗃 🗃 🙀 🐨 🔊 🕹 🖦 🗶 📖			
Project P	Channel Name / Driver	Connection	Sharing Virtual Network
B Enedder I III Add Schedde SMMP Agent IIII Add Agent	<		
Date Time Source			^
① 09/02/2021 10:00:35 KEPServerEX:Runtime ③ 09/02/2021 10:00:36 KEPServerEX:Runtime ⑥ 09/02/2021 10:00:36 KEPServerEX:Runtime ⑧ 99/02/2021 10:00:36 KEPServerEX:Runtime	Simulation mode is enabled on device three twee twee sectors and Simulator device driver loaded successfully. Starting Simulator device driver. Simulator Device Driver VS 5.584.0 Advanced Tage Plugin VK 5.584.0 Data Logger Plugin VS 5.584.0 Alams & Events Plugin VS 5.584.0 SIMIP Agent Plugin VS 5.584.0	<u>A</u> vançar Cancelar	
(i) 09/02/2021 10:00:36 KEPServerEX\Runtime	Media Level Redundancy Plug-In V6.9.584.0		×
Ready			Default User Clients: 0 Active tags: 0 of 0:

Fill in the Wizard configuration with the information from the OPC Server.

🐝 UA Configuratio	n uaPLUS.Net4.Ua.Config.Xml — 🗆 🗙		
Application Name	Advosol uaPLUS Server		×
Application URI	um:LUIZOTAVIO:UA:Advosol:uaPLUS	+	Add Channel Wizard
Product URI	uri:advosol.com:Advosol:uaPLUS		
			Specify the unique URL destination of the OPC UA endpoint.
Base Addresses			Endpoint URL:
http://LUIZOTAVIC	D:80/Advosol/uaPLUS AVIO:62841/Advosol/uaPLUS		opc.tcp://LUIZOTAVIO:62841/Advosol/uaPLUS 🔞
Security Policies unsecured Basic 129m	Sign and Encrypt		Select the endpoint security policy. Note that Basic128Rsa15 and Basic256 have been deprecated by the OPC Foundation and are no longer considered to be secure. Security Policy: Basic128Rsa15 (Deprecated)
Basiuc256	Sign Sign Sign and Encrypt		Select the type of encryption to use for messages between the driver and server.
User Token Policies	S Anonymous 🗹 User Name 🖾 Certificate		Sign and Encrypt V
Certificates	Manage the Application Certificate. Certificates can be imported or created. Import Server Certificates.		Avançar Cancelar
Trace Configuration	1		
Output File uaf	PLUSJog.txt		
Trace Mask 513	3 Change 🔽 Delete On Load		
	Save Save and Close Cancel		

Click on Add Device (1) and give it a name. Fill in all the device parameters until you reach the Import Items (2) page.

The import tool WILL NOT work right now because the OPC Server (Project) is not running yet. Click on Advance (3) and finish your configuration.



Importing Server Certificate

Back in the OPC UA Configuration Manager, go to the Trusted Servers (1) tab and Import (2) the OPC Server certificate.

OPC UA Conf	iguration Mana	ger		1		\times			
Server Endpoints	Trusted Clients	Discovery Servers	Trusted Servers	Instance Certificates					
OPC UA Client Driver trusts this list of servers									
Server Name			URI			A			
FS_OPCS	erver		um:LUIZOT	FAVIO:UA:Advosol:uaPL	US				
	1								
	/								
	/								
/	2								
Import Export Remove Reject View certificate									
			L						
Note: Server Runtime reinitialization is required to utilize changes. Close Ajuda									

Project Runtime

Once the configuration is done, you can launch the Project to test the communication exchange. Remember to have the OPC Server Module enabled on R un > Startup.

🌞 🚘 🕑 🕕	Startup
Edit Draw Run Info	Startup Settings UserName: Guest Password: Project server: localhost Port: 3101 PortWA: 3102 Use Only Windows Authentication Startup computer: Local Execution Path: Project Path Project Server Custom: Run Modules Alarms Devices Reports Datasets Historian Displays Scripts OPCServer Run Startup Run Startup
UseCount Dictionaries Extensions	Status: Project not running

You can now go to your Kepware Device and Browse for the existing Tags.

The Tags Visibility property (in Edit > Objects) must be configured according to the description below:

- Public: Can be read and write in your OPC
 Protected: Can only be read

⚠

• Private: will not be seen or browsed

In the Advosol UAplus Server popup, you can keep an eye on the Clients connected to your server. As shown in the image below, we have one client (Kepware's OPC Quick Client) that is successfully communicating with our Project.

P Advosol usPLUS Server X	Property Watch - OPCUA-Con	figuration	– 🗆 X					
Endpoint URLs opertop://tutastavio:62841/Advasol/uaPLUS	Always on top	Usen Guest						
Sessions	Browser List1 List2 List3 List	ы	Selected Object:					
Sessionid Name Uter Last Contact	Press enter to conclude editio	on. Position on object row to view	Modules Status					
Kepware_KEPServerEX_UA_Client_Driver:Client_Channel Anonymous ns=3s=2005605288 11:55:00	Object	Value	Object Properties					
	*	Visioe	Property *					
	Tag.Tag11 Kepware	3						
	Tag.Tag12_Kepware	1						
	Tag.Tag13_Kepware	2						
Subscriptions			-					
Subscriptionid Publishing Interval Item Count Seg No		•	<					
3 1000 3 5	inistranserver.nnas							- D Y
	Man Trate Links							
File Lot	view loois Hep							
	LE CE E & LUE X							
E-100 Keps	are.KEPServerEX.V6	tem ID	🕗 🕹 Da	sta Type	Value	Timestamp	Guality	Update Cour
	oT General An re loT Agent	Cient_Channel OPCDevice.DAplug	in Tag Tag11_Kepw Lo	ng	3	11:53:02.106	Good	2
	oT Gateway REST Agent	Client_Channel OPCDevice.DAplug	in Tag. Tag12_Kepw Lo	ng	1	11:52:55.792	Good	2
Status: Running 11:5:10	System	Calcient_chamel CPCDevice.D4plug	in Tag Tag 13_Napw Lo	ng	2	11:53:00.385	Good	2
	ThingWox							
	ient_Channel_Statistics							
	lant_channel_system							1
	lient Channel OPCDevice DAplugin							
		¢						>
Ready								Item Count: 76