

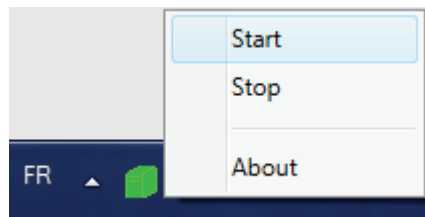
# Getting started with the SOFREL OPC UA Server

## 1 Installation

- ☑ Run the file "**OPC-UA-Setup-x.xx.xx.exe**" to install the server.

If SOFREL OPC UA Server is being updated, it is recommended:

- ✓ **To stop** SOFREL OPC UA Server through the Windows system tray:



- ✓ And **to backup** the content of the following folders:

<C:\Program Files\Lacroix Sofrel\Sofrel OPC UA Server\Configuration>

<C:\Program Files\Lacroix Sofrel\Sofrel OPC UA Server\Equipments>

## 2 XML file configuration

### 2.1 Copying an example

- ☑ Copy one of the "Example" files **in the following folder**:

<C:\Program Files\Lacroix Sofrel\Sofrel OPC UA Server\Configuration\Examples>

- ☑ Paste this file into the folder:

<C:\Program Files\Lacroix Sofrel\Sofrel OPC UA Server\Configuration>

### 2.2 Renaming the example

- ☑ Rename the file to "**SofrelOPCUAServer.xml**"  
(if file extensions are hidden, do not enter .xml).
- ☑ **Edit this XML file** using the "Notepad.exe" application;  
it is divided into **2 parts**:
  - **General settings**: use the default general settings  
(see *documentation for advanced configuration*)
  - **Devices**: these must be changed.  
Copy/paste an identical site, then customize it  
by changing the **settings shown in red** below.

## 2.3 Customize the XML file

### 2.3.1 Creating a device

Change the **settings shown in red** below:

<code>&lt;Name&gt;<b>S500_tests</b></code>	You can name the device as you wish, but each name must be unique.
<code>&lt;Address&gt;<b>1/2/3</b></code>	x/y/z: these 3 fields are used for identification purposes. x: site number, also identified in the device configuration (must be unique) y: 1 <sup>st</sup> identification code z: 2 <sup>nd</sup> identification code
<code>&lt;SerialNumber&gt;<b>0100100001</b></code>	Device serial number (optional)
<code>&lt;Type&gt;<b>S500</b></code>	The options available are S500, AS, S4 or DL (for LS or LT)
<code>&lt;AuthenticationMethod&gt;<b>None</b></code>	The options available are: For S500 or AS: None, Password or Challenge For S4: None or Authority For LS or LT: None
<code>&lt;Password&gt;<b>Pa\$\$w0rd</b></code>	Password used to access the device (for S500 or AS only)
<code>&lt;IPAddress&gt;<b>x.x.x.x</b></code>	IP address of the device (irrelevant for LS or LT)

#### 2.3.1.1 Case of an S500 without password management

```
<Equipment>
  <Address>1/0/0</Address>
  <Name>S500_Vern</Name>
  <Type>S500</Type>
  <Links>
    <Link>
      <IPAddress>192.168.1.1</IPAddress>
    </Link>
  </Links>
</Equipment>
```

#### 2.3.1.2 Case of an S500 with challenge-based password management and two communication media

```
<Equipment>
  <Address>2/0/0</Address>
  <AuthenticationMethod>Challenge</AuthenticationMethod>
  <Name>S500_Rennes</Name>
  <Password>MODBU1</Password>
  <Type>S500</Type>
  <Links>
    <Link>
      <IPAddress>192.168.1.2</IPAddress>
    </Link>
    <Link>
      <IPAddress>192.168.1.22</IPAddress>
    </Link>
  </Links>
</Equipment>
```

### 2.3.1.3 Case of an S4 with certificate management

```
<Equipment>
  <Address>5/0/0</Address>
  <AuthenticationMethod>Authority</AuthenticationMethod>
  <Name>S4_Vannes</Name>
  <Type>S4</Type>
  <Links>
    <Link>
      <IPAddress>192.168.1.5</IPAddress>
    </Link>
  </Links>
</Equipment>
```

### 2.3.1.4 Case of an LS or LT

```
<Equipment>
  <Address>10/0/0</Address>
  <Name>LS42_Lorient</Name>
  <Type>DL</Type>
</Equipment>
```

## 3 Test client configuration

### 3.1 Download the UaExpert client

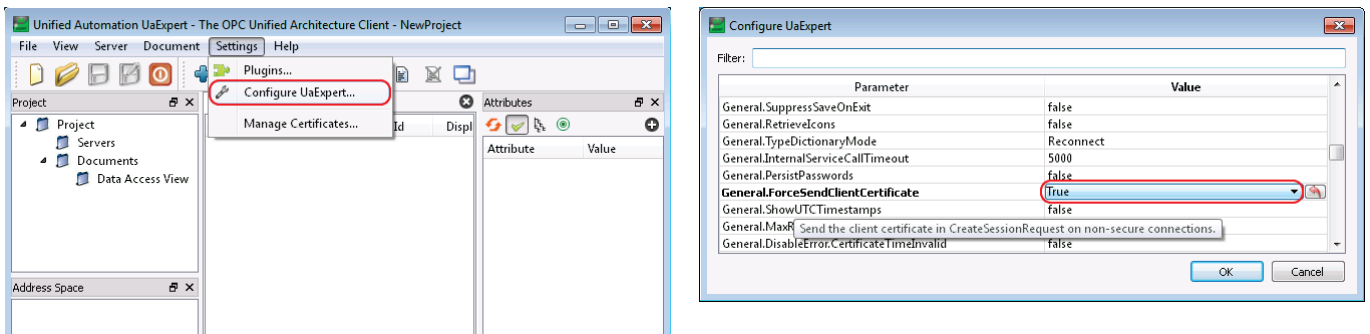
You can download the UaExpert client from the following website:

<https://www.unified-automation.com/downloads/opc-ua-clients.html>

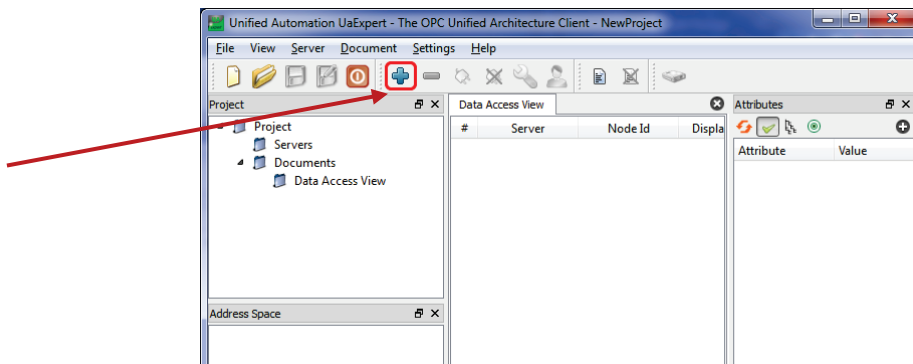
To download this UaExpert client, the user must register with the website.

### 3.2 Start UaExpert

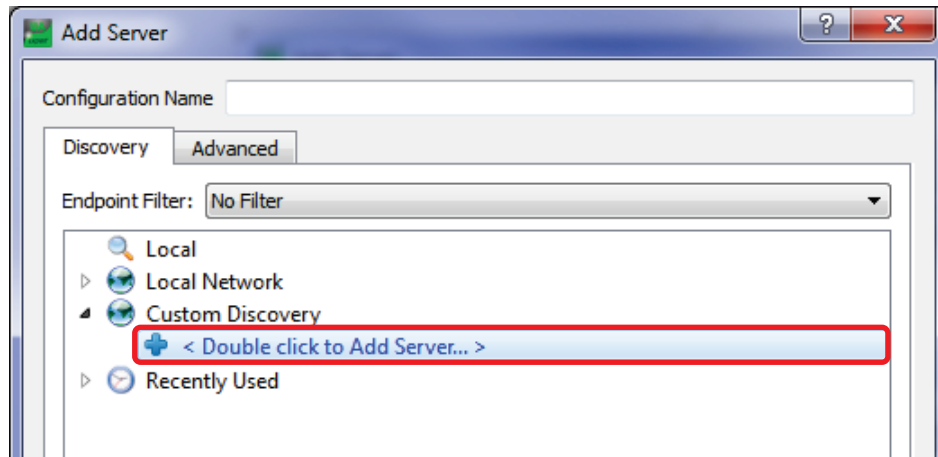
To be able to use an unsecured connection with UaExpert, the user must set the parameter « **General.ForceSendClientCertificate** » to **True** by following the procedure below:



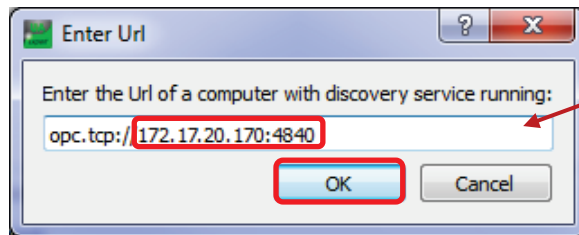
Add a server by clicking on the symbol **+** (Add Server).



### 3.3 Select the SOFREL OPC UA server

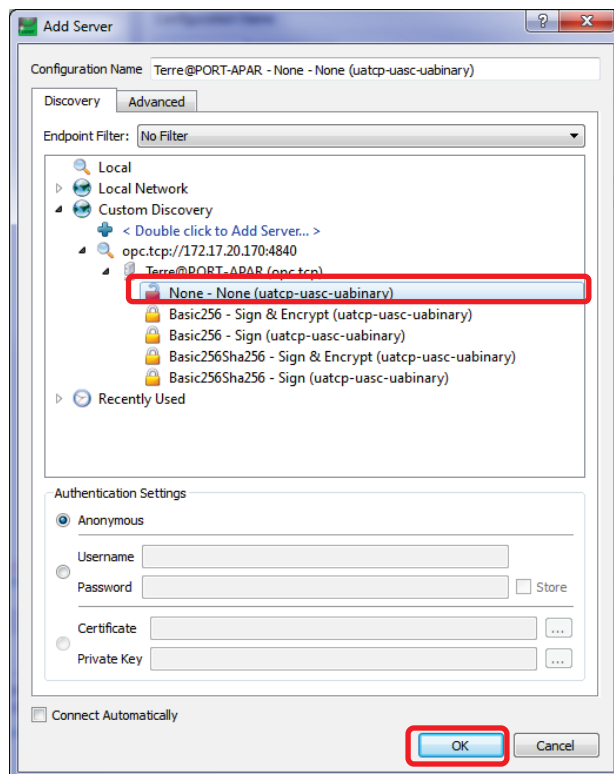


Double-click on "Double click to Add Server...".




Enter the **IP address** of the SOFREL OPC UA server, followed by "4840" corresponding to the port number.

Then click on **OK**.



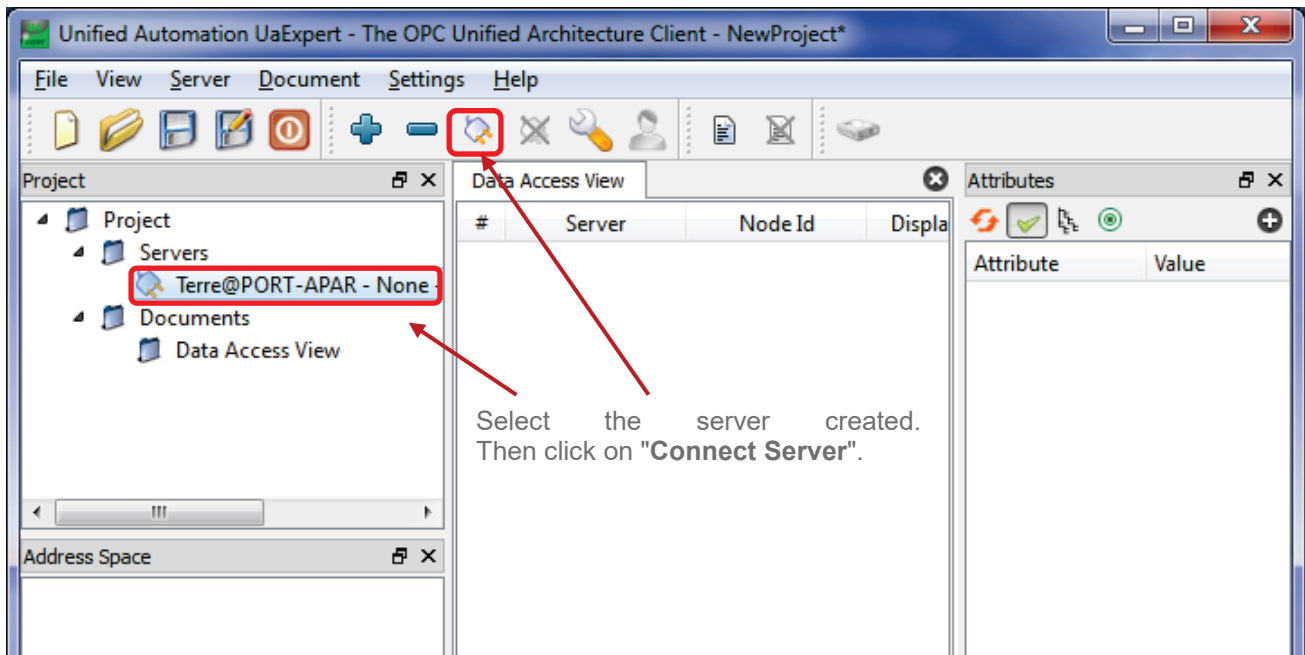
Select the **security level** for logging onto the SOFREL OPC UA server.

Selecting "None - None" indicates that the connection is not secure.

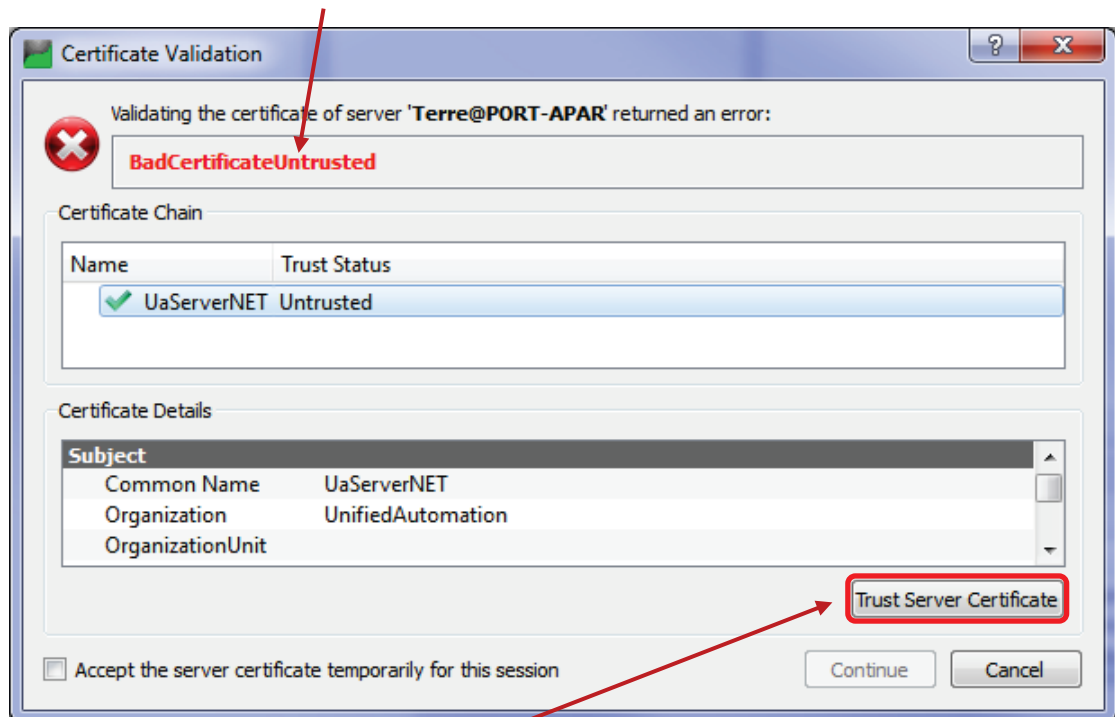
Secure connections are preceded by the icon .

Then click on **OK**.

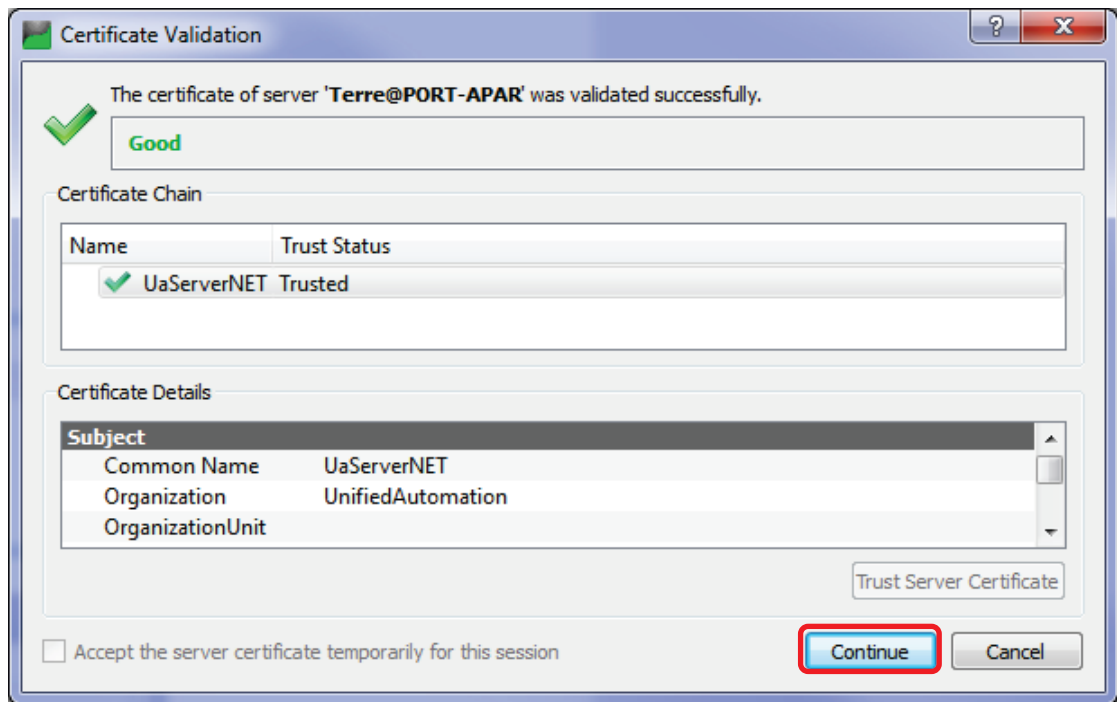
### 3.4 Logging onto the SOFREL OPC UA server



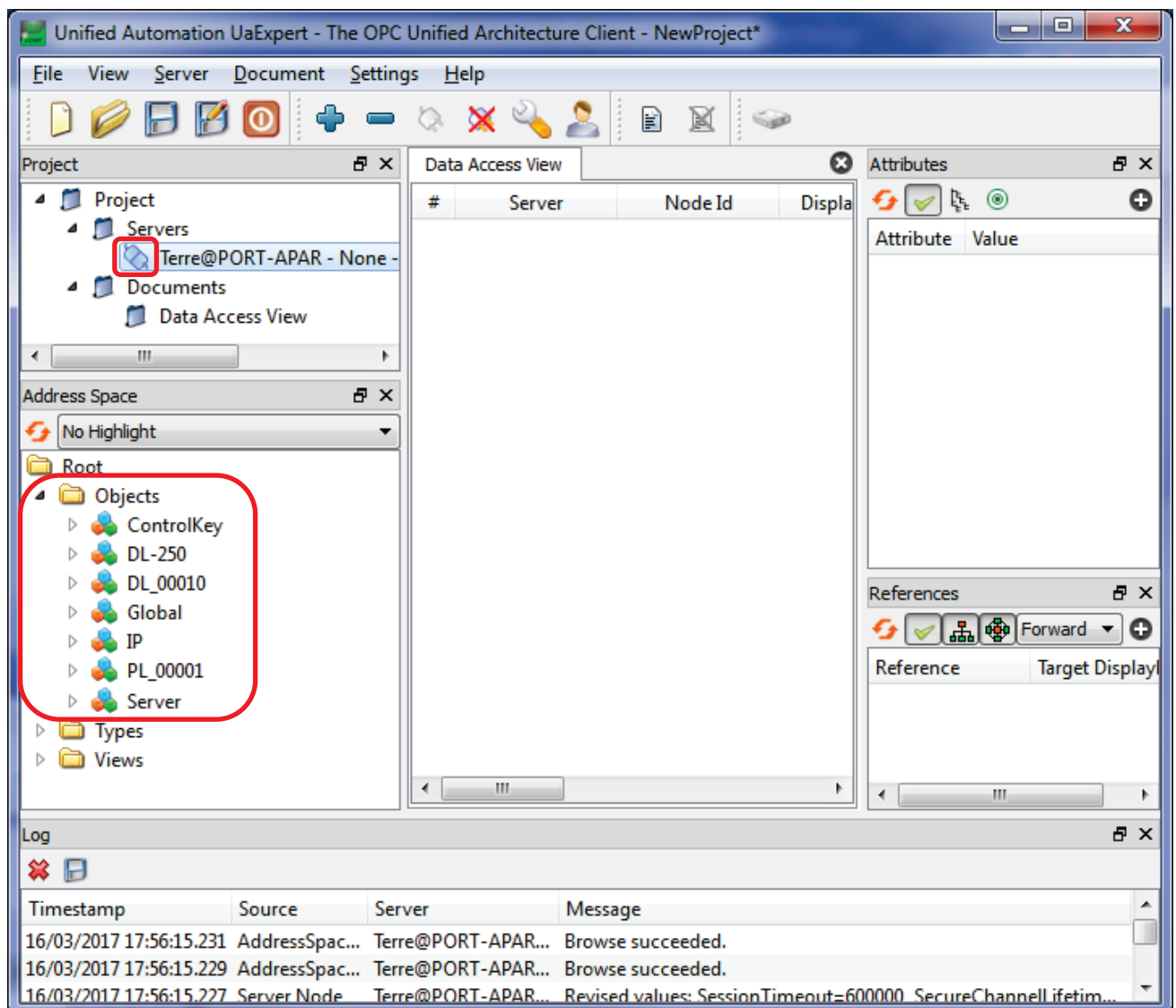
An error message is displayed indicating that the SOFREL OPC UA server is not recognized by the UaExpert client.



Click on "Trust Server Certificate".



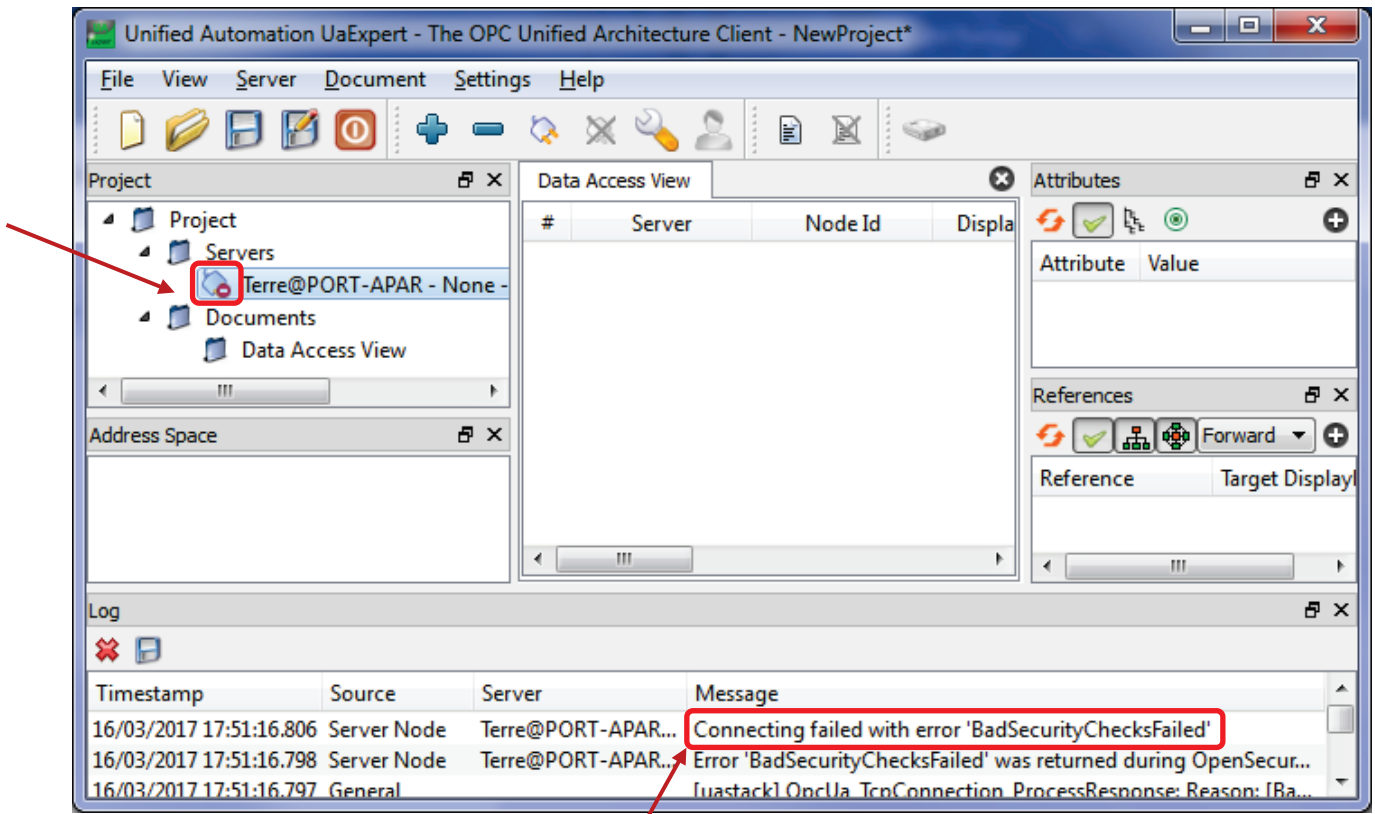
Then click on **Continue**.



If you have selected an unsecured connection (None-None), you are logged onto the SOFREL OPC UA server.

The symbol in front of the server indicates that the connection was successful.

The tree view of OPC items is displayed in the "Address Space" view.



If you have selected a **secure connection**, then the connection failed because the UaExpert client certificate is not recognized by the SOFREL OPC UA server.

### 3.5 Acceptance of a client certificate by the SOFREL OPC UA server

The UaExpert client's certificate has been rejected by the SOFREL OPC UA server.

The SOFREL OPC UA server thus copies it into the following folder:

<C:\ProgramData\unifiedautomation\UaSdkNetBundleBinary\pkiserver\rejected\certs>

The certificate file is named "UaExpert..." and its extension is ".der".

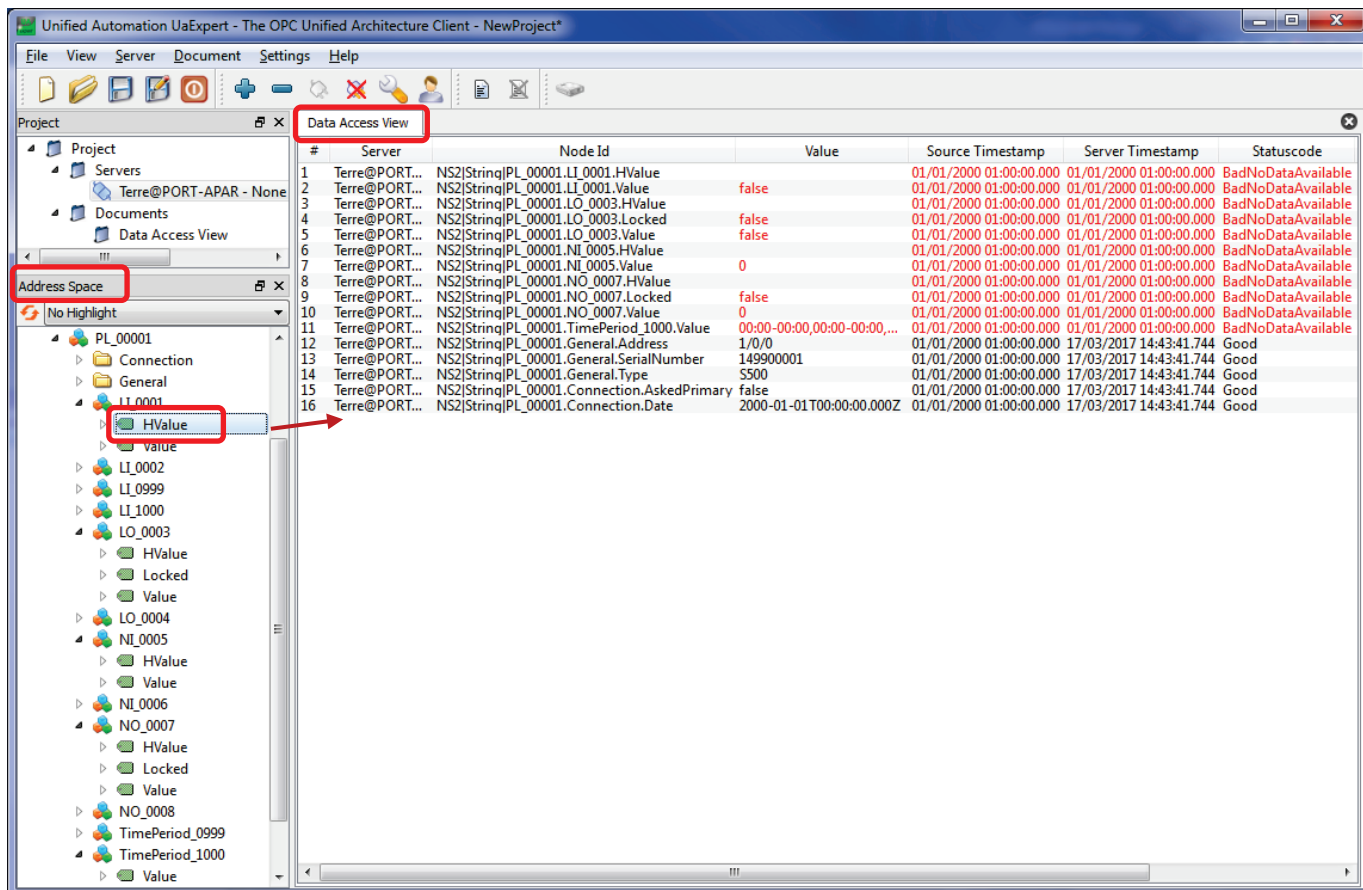
**Cut and paste** this file to move it to the following folder:

<C:\ProgramData\unifiedautomation\UaSdkNetBundleBinary\pkiserver\trusted\certs>

Next, click on "**Connect Server**" to log onto the SOFREL OPC UA server.



## 3.6 Subscribing to items

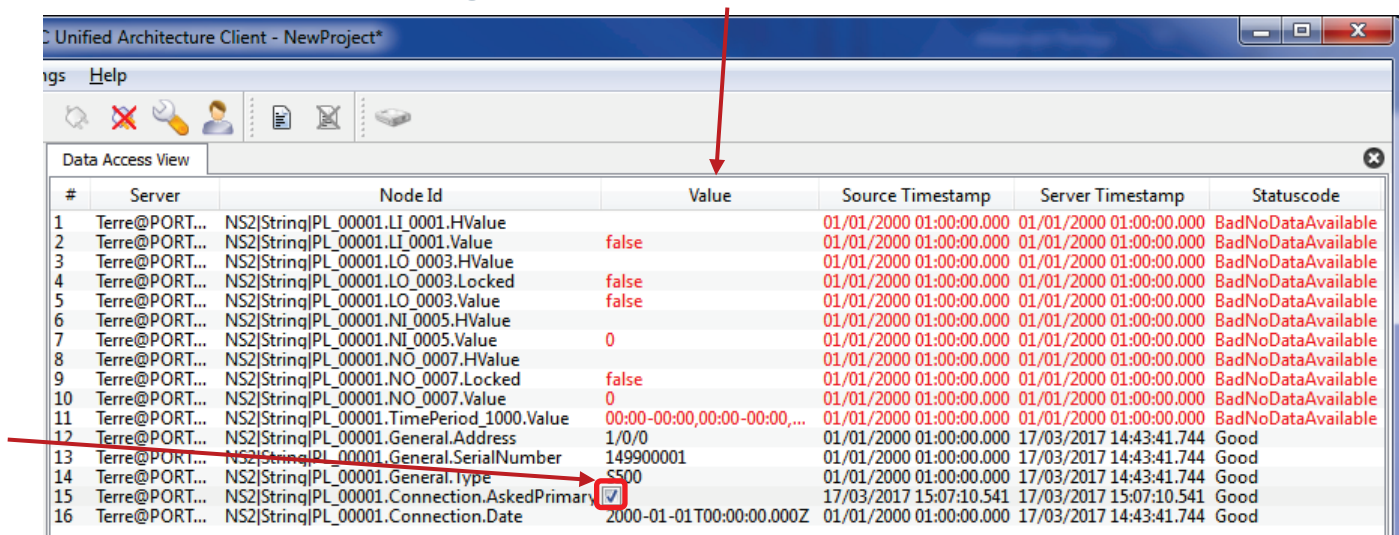


The tree view of OPC items is displayed in the "Address Space" view under "Root\Objects".

You can only subscribe to OPC items preceded by the icon

To subscribe to an OPC item, drag it into the "Data Access View".

## 3.7 Communicating with a device



To call the device, double-click on the value of the **AskedPrimary** item ("Value" column) in the "Data Access View".

Check the value of this item, then **click on another row** of the "Data Access View" to validate your choice.



## 3.8 Autoconfiguration

If the data of the device do not appear in the tree view of OPC items, the user must set the value of the « Connection\ConfigurationRead » item to True (if it is set to False).

- If the device is a Remote Terminal Unit (S500, AS or S4), then the user must call the device (as described in §3.7).
- If the device is a Data Logger (LS or LT), then the user must:
  - ✓ Either trigger a communication test with the SCADA (by using Bluetooth through the interface of Softools)
  - ✓ Or wait for the first transmission scheduled for the day for this Data Logger.

The OPC item « Connection\Date » contains the date of the last communication with the device. So it allows to know if a communication has occurred lately with the device.

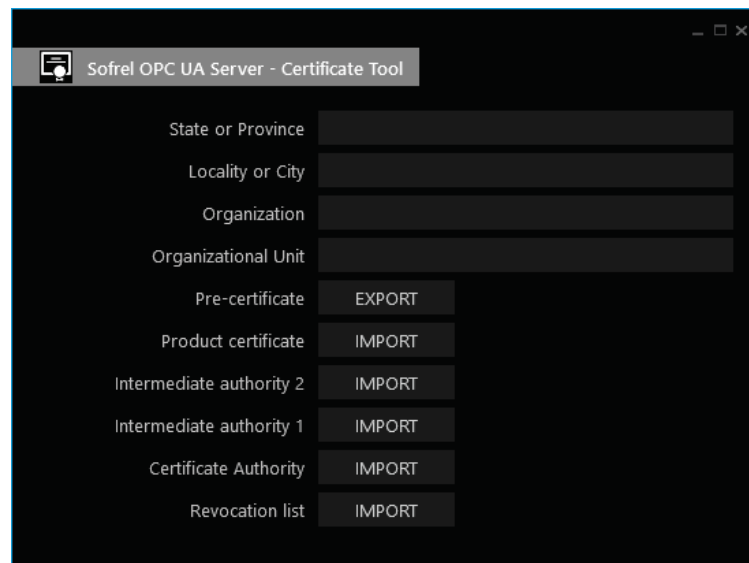
## 4 Authentication

The SOFREL OPC UA server observes the **security rules** described in the **S4 online help**.

First, the SOFREL OPC UA server user must **export the pre-certificate** (CSR file) and use the **S4-Keys** certification authority, or another PKI to **sign electronic certificates** (see "- **Administration - Security**" in the S4 online help).

All the devices on the subnet must authenticate themselves with electronic certificates signed by the same certification authority.

Authentication between each S4 and the SOFREL OPC UA server is mutual and systematic.



## 5 Diagnostic tool

The events recorded in the SOFREL OPC UA server logs are located in the following folder:

<C:\Program Files\Lacroix Sofrel\Sofrel OPC UA Server\Log>

The "**Configuration.log**" file contains all the errors encountered when reading the "**SofrelOPCUAServer.xml**" configuration file.