Integration Objects'
OPC UA Simulation Tool

OPC UA Server Simulator Full Edition
Version 1.2 Rev.1

QUICK USER GUIDE

Integration Objects' OPC UA Server Simulator Full Edition Quick User Guide Version 1.2 Rev.1
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ABOUT THIS USER GUIDE

This guide is a step by step guide on how to install, use and remove the OPC UA Server Simulator Full Edition.

The OPC UA Server Simulator Full Edition simulates real-time data for a configurable set of tags and values, used for testing purposes. The simulated data are then stored in the memory level enabling the simulator to respond to historical data read requests from OPC UA client applications.

INSTALLATION PRE-REQUISITES

In order to properly run the OPC UA Server Simulator Full Edition, you must install these software components on the target system:

- Microsoft .NET Framework version 4.6 or later.

INSTALLING OPC UA SERVER SIMULATOR FULL EDITION

Execute the « IntegrationObjects'OPCUAServerSimulaton_1.2.1_FullEdition » program on your machine using an administrator account. The installation wizard will then take you through the different steps.

1. Right click on the downloaded installation package for OPC UA server Simulator and select "Run as administrator" from the displayed menu. The installation welcome dialog box will appear.
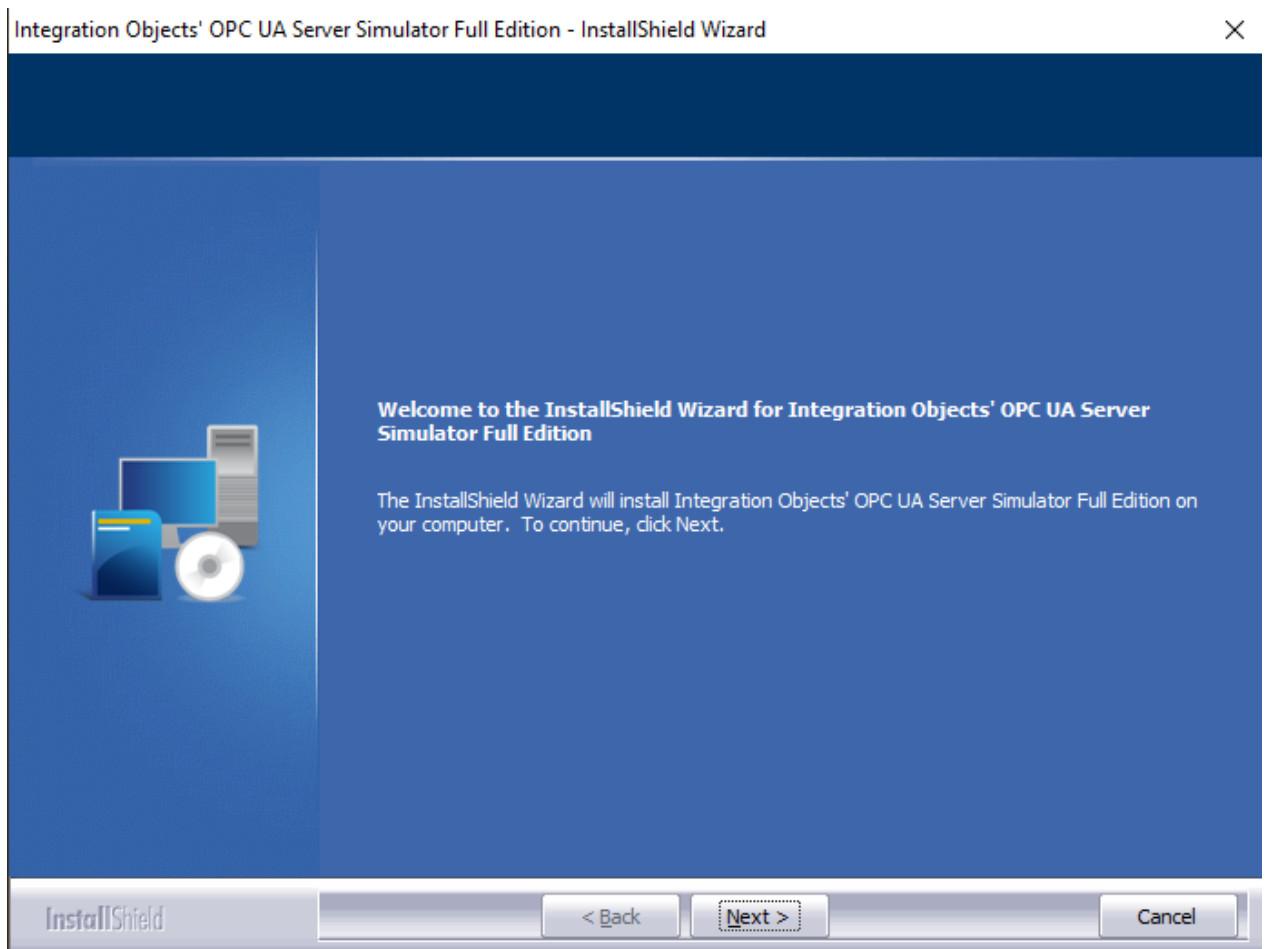
Figure 1: Installation Welcome Dialog

2. Click the Next button. The license agreement will be displayed.
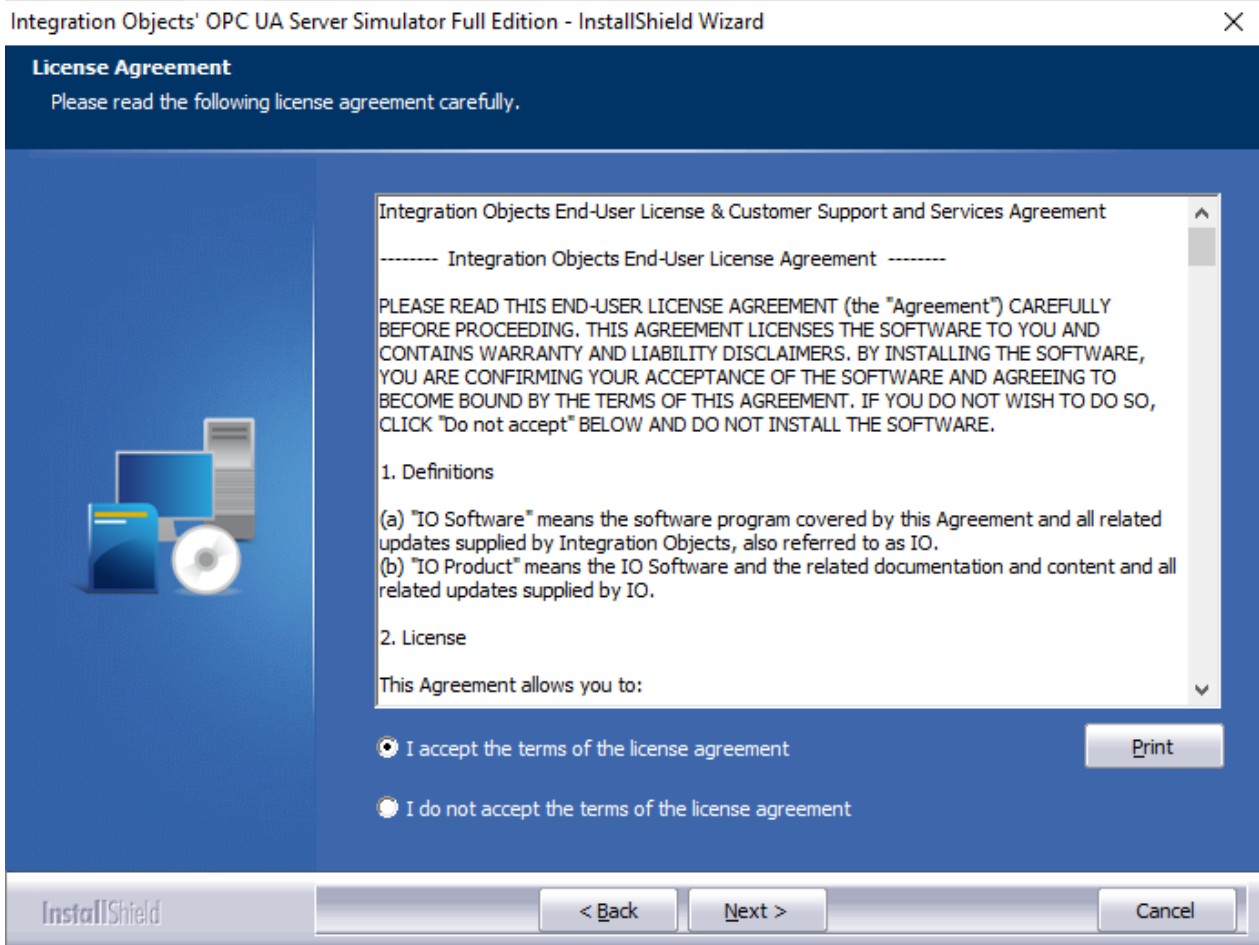
Figure 2: License Agreement Dialog

3. After reading the license agreement, select the first option and click the Next button. By proceeding, you are accepting all of the license agreement terms. Otherwise, you can cancel the installation. The customer information dialog box will appear.
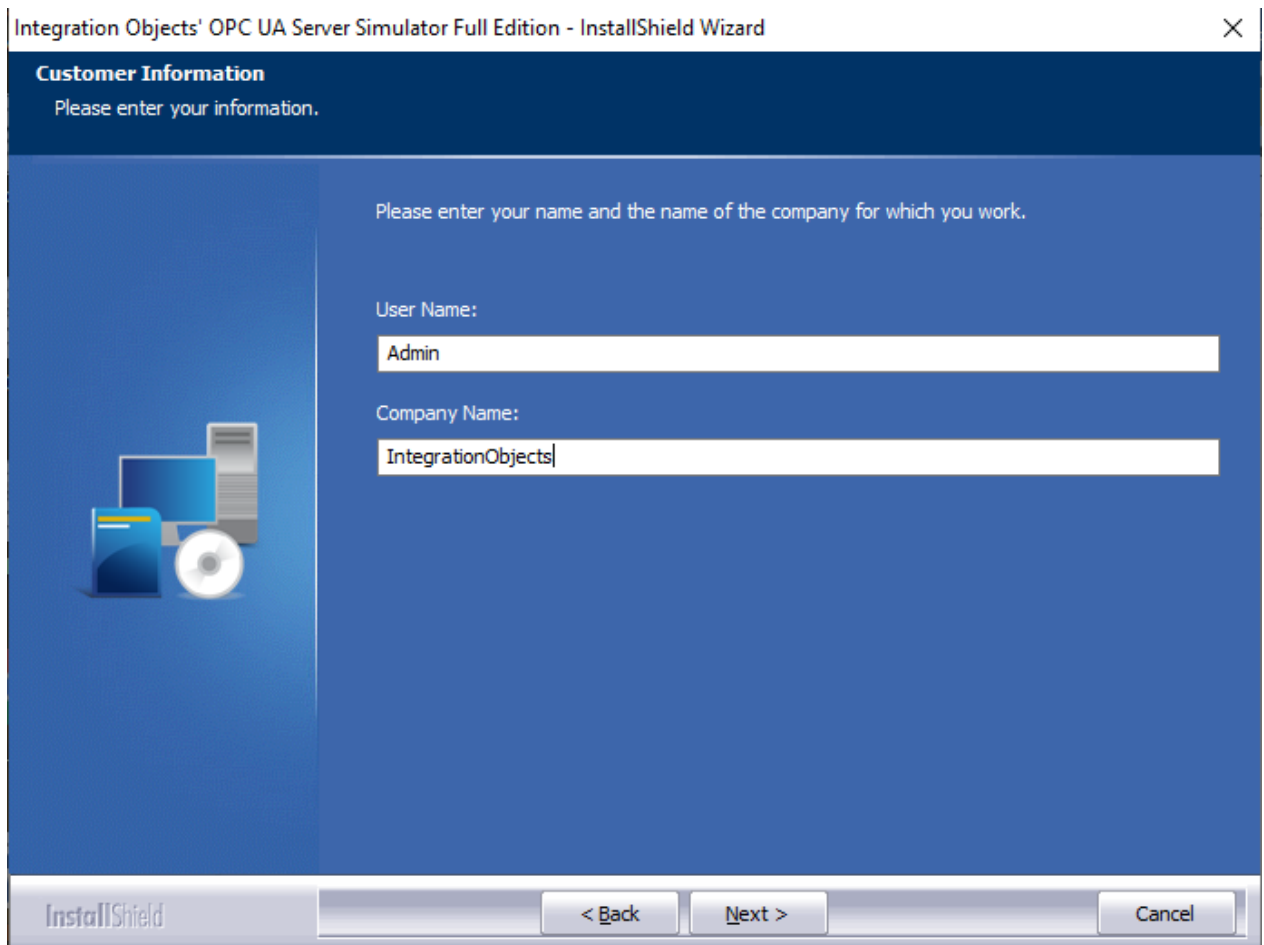
Figure 3: Customer Information Dialog

4. Add the user name and the company name and then click the Next button. The dialog box for choosing the deployment version will be displayed.
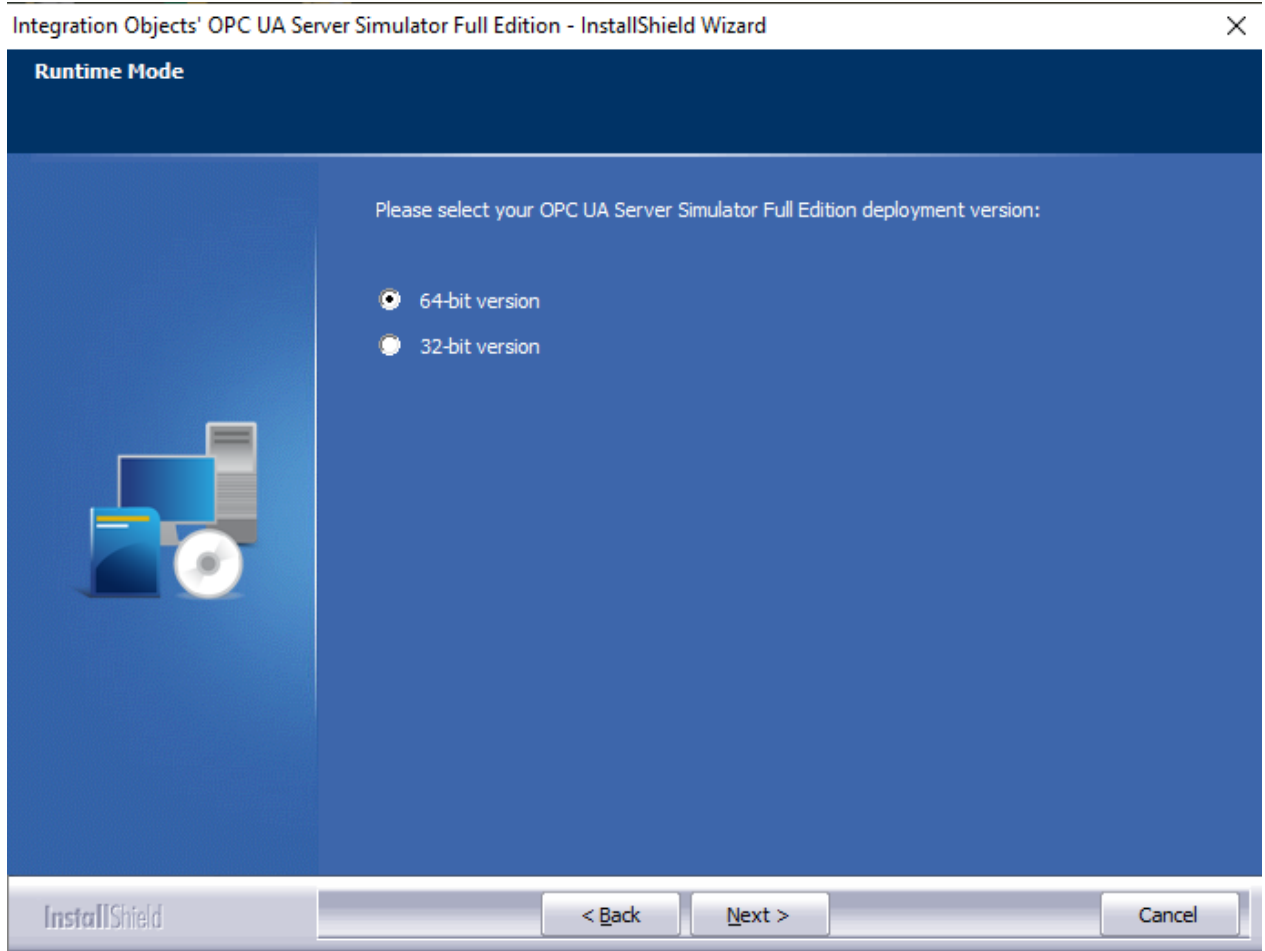
Figure 4: Choose Deployment Version Dialog Box

5. After selecting the OPC UA Server deployment version, the dialog box for choosing the destination folder will be displayed.

6. Click the Next button to use the default destination folder and continue the installation, or the Browse button to select a different destination folder. The installation dialog box will then appear.

7. Click the Next button to continue with the installation of the OPC UA Local Discovery Sever if it is not already installed. The dialog box for choosing to install the UA Local Discovery Server will be displayed as illustrated below.
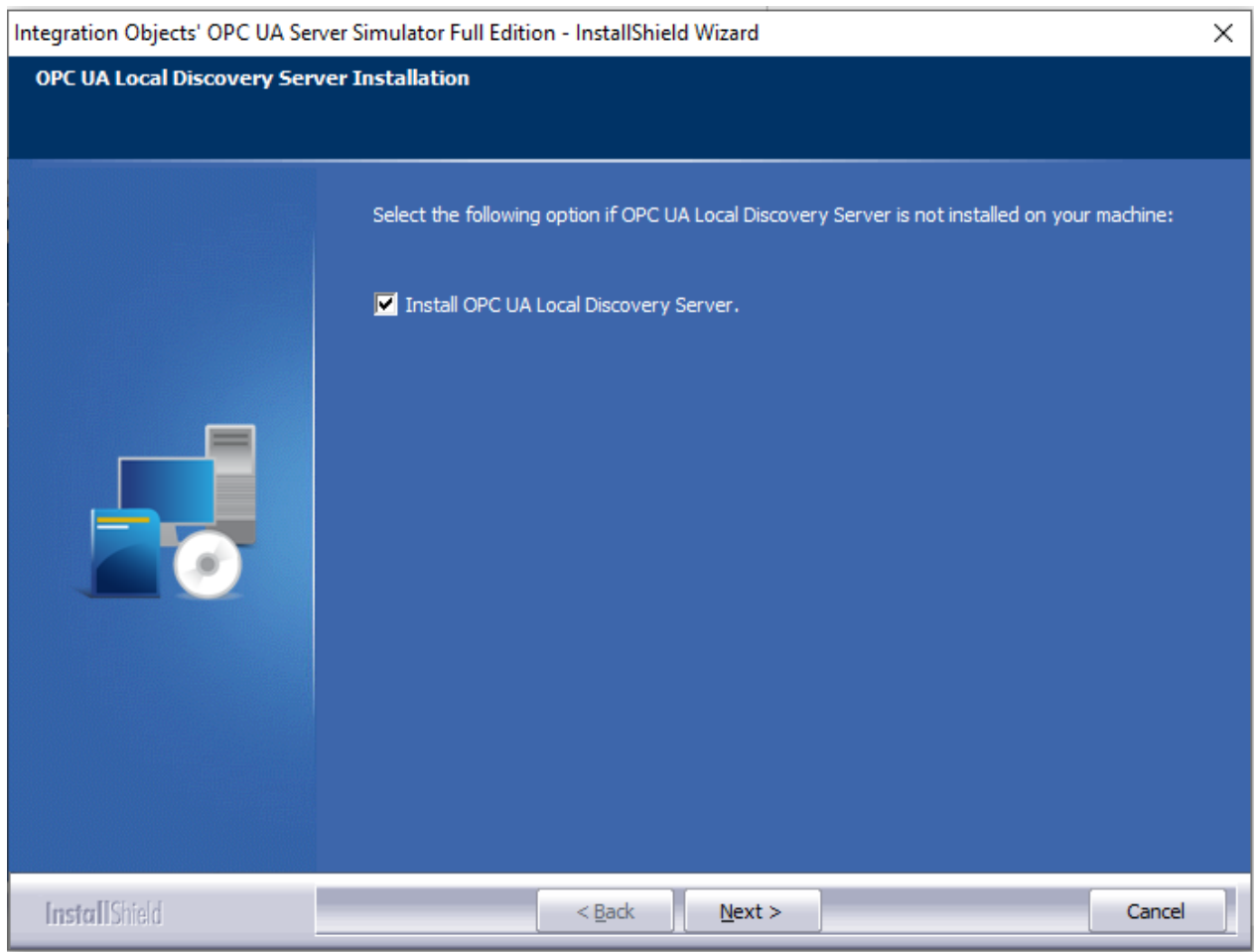
Figure 5: OPC UA Local Discovery Server

To install the OPC UA Local Discovery Server:
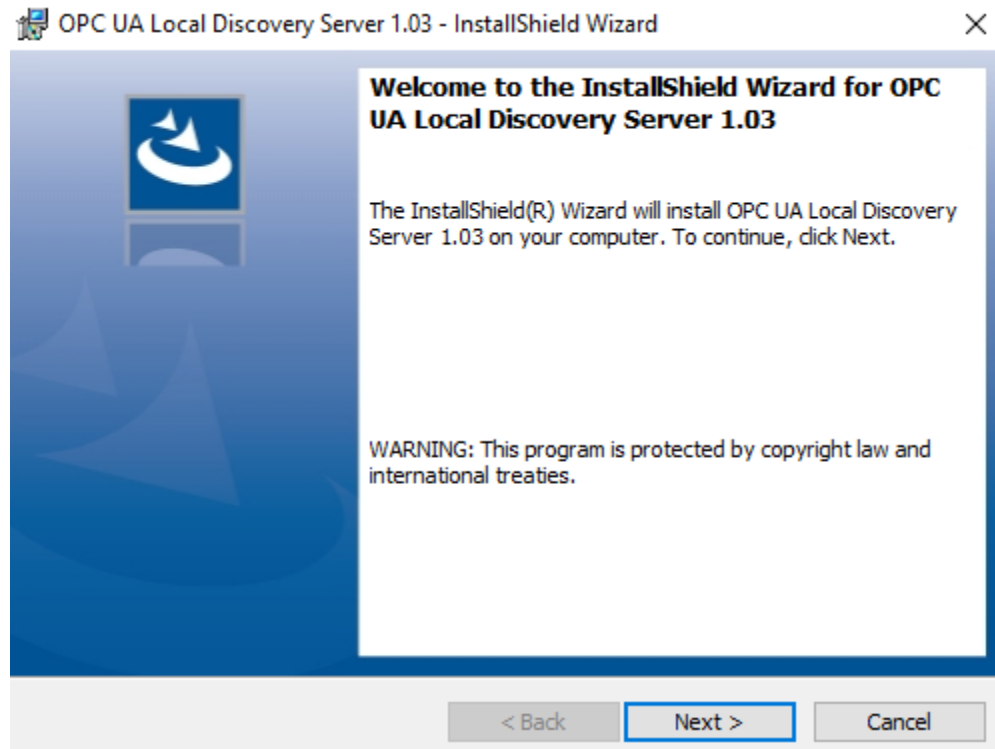1. Select it, then click next:

Figure 6: Installation UA Local Discovery Welcome Dialog

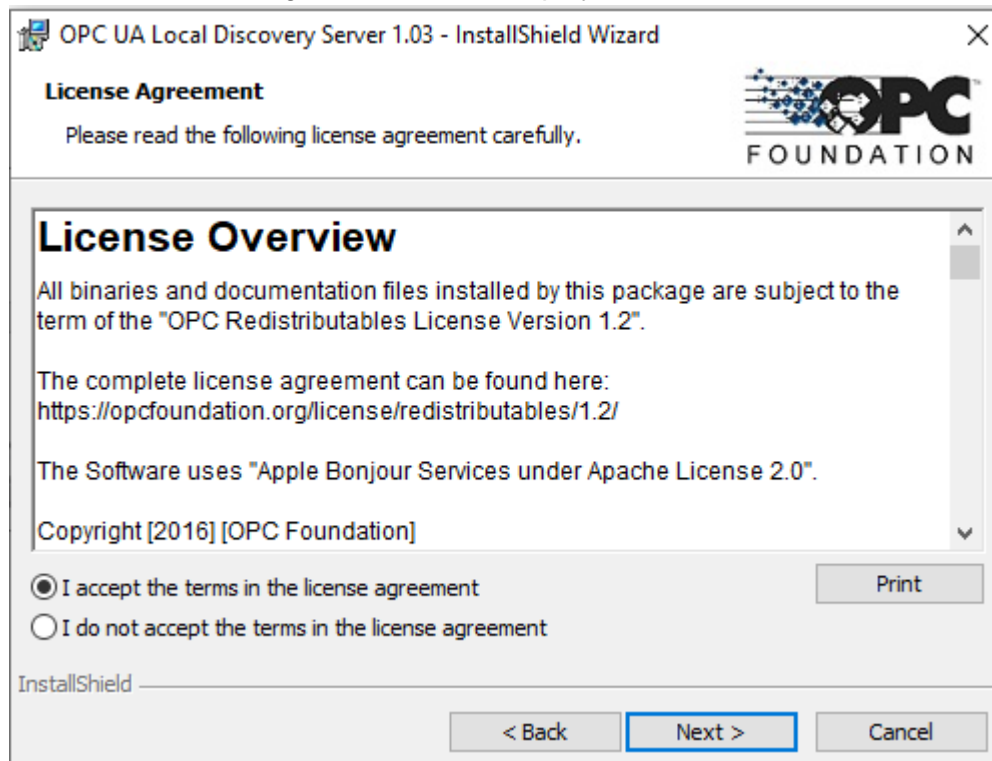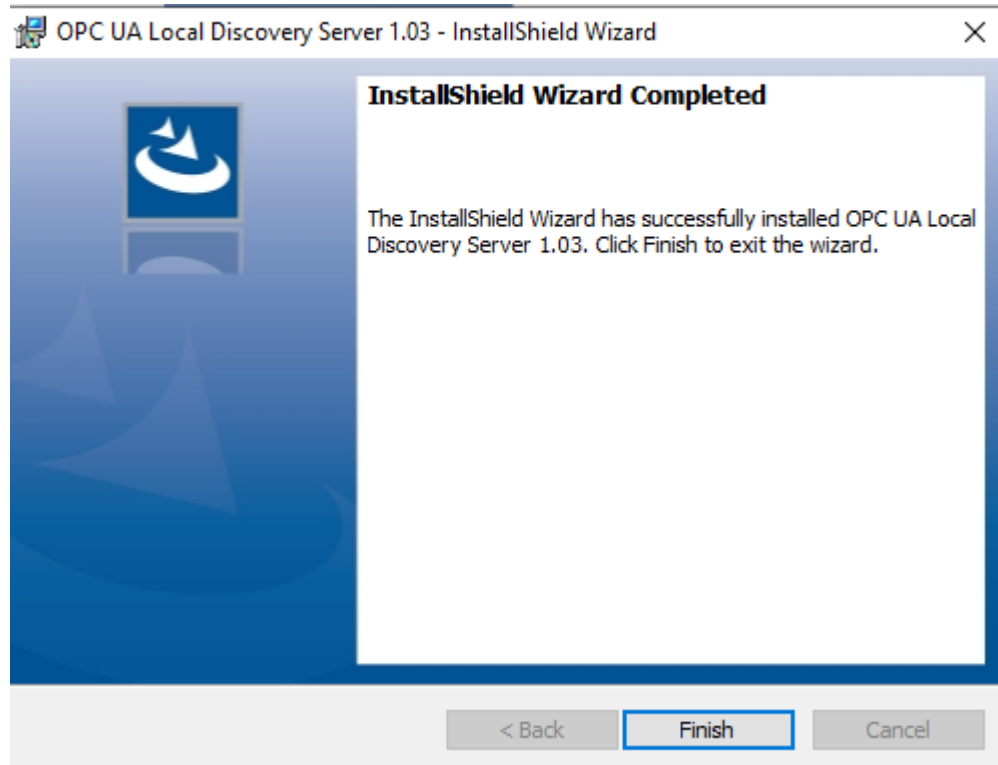2. Click next, the license agreement will be displayed:

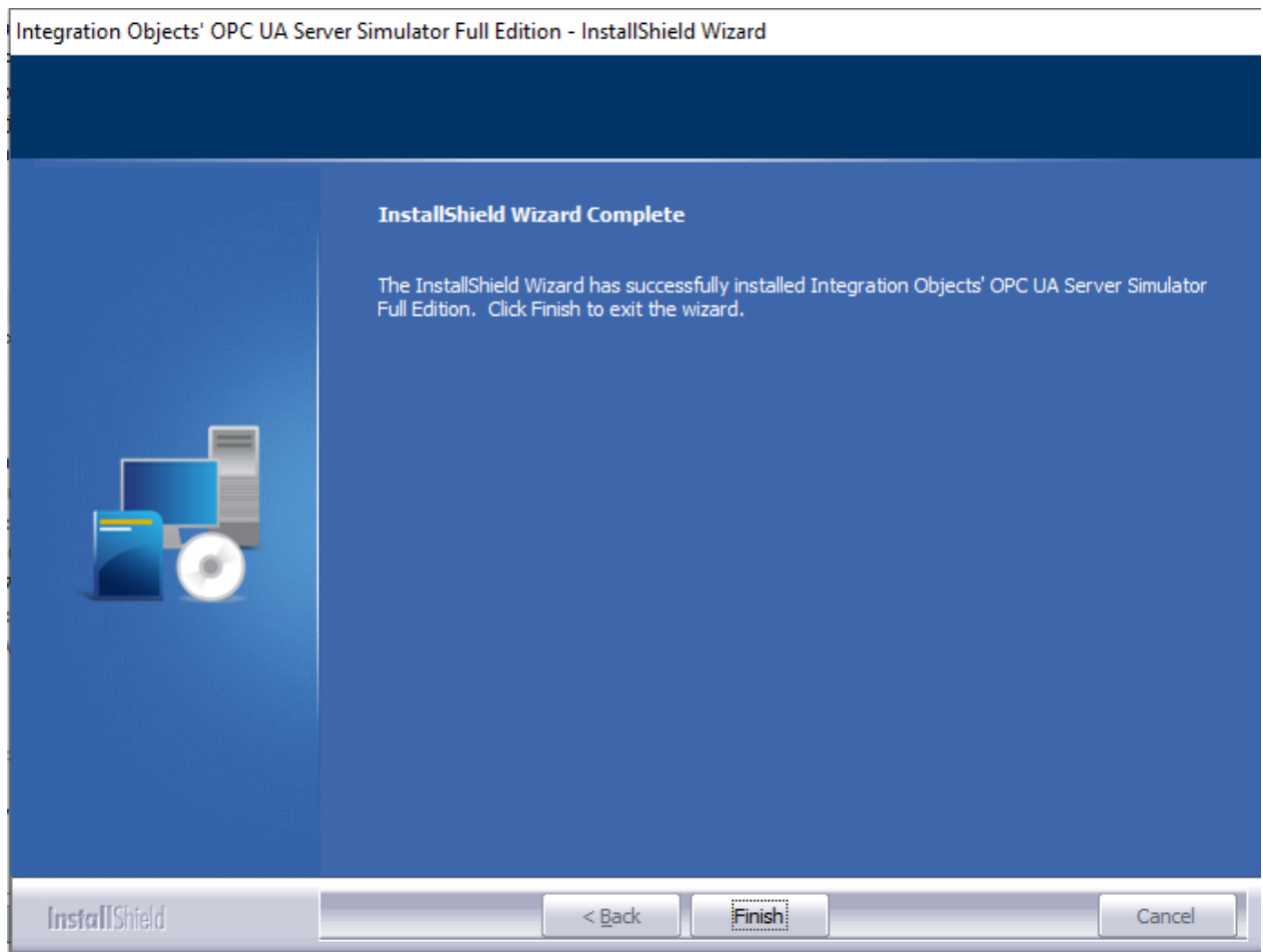**Figure 7: UA Local Discovery License Agreement Dialog**

3. After reading the license agreement, select the first option and click the Next button. Then click finish.

Figure 8:UA Local Discovery Installation Completed Dialog

8. Click the Finish button to complete the installation.

Figure 9: Installation Completed Dialog

Once the installation is completed, you can start the OPC UA Server Simulator Full Edition as follows:

1. Go to **Start → Programs → Integration Objects → OPC UA Server Simulator Full Edition**
2. Start the OPC UA Server Simulator Full Edition using an administrator account.
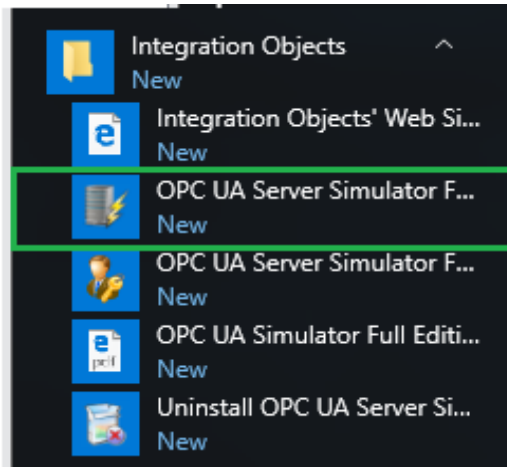
Figure 10: OPC UA Server Simulator Full Edition Start Menu

USING THE MAIN USER INTERFACE

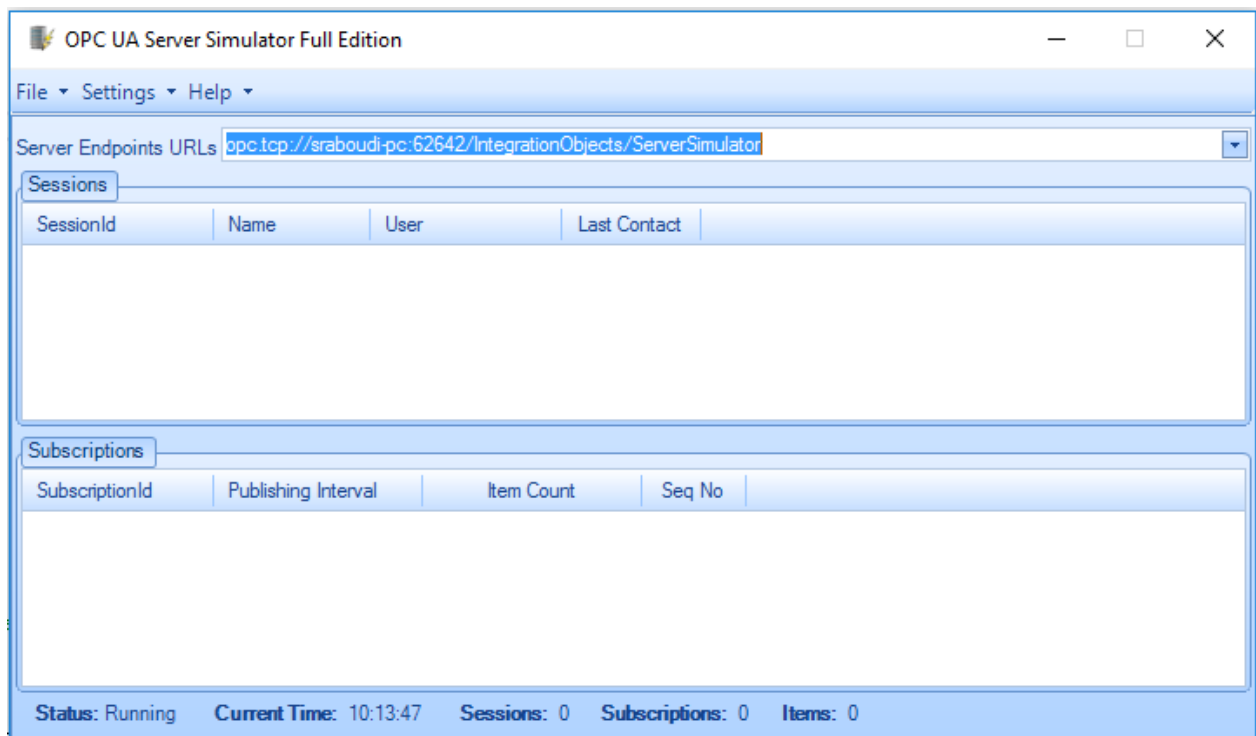The main user interface of the simulator is illustrated in the figure below:

Figure 11: OPC UA Server Simulator Full Edition- Main User Interface

The user interface displays general information about OPC UA Server Simulator Full Edition, which are:

- Server Endpoint URLs

- Sessions information
    - Session ID
    - Session Name
    - User ID
    - Last Contact Time
- Subscriptions information
    - Subscription ID
    - Publishing Interval
    - Item Count
    - Sequence Number
- Server Status
- Total Subscriptions
- Total Sessions
- Total items
- Current Time

The server menu contains 3 menu items (File, Settings and Help) as shown in the following screenshots:

- Click on "**File → Exit**" to request all connected clients to disconnect and close the server.
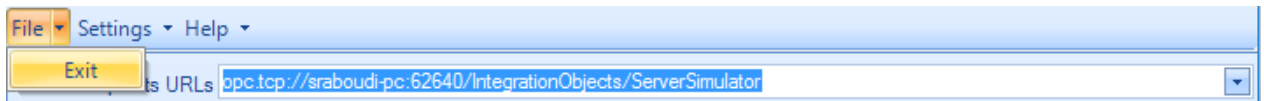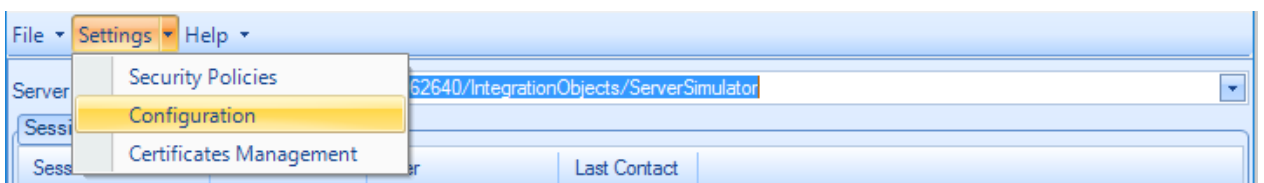

Figure 12: Exit Menu Item

- Click on "**Settings→Security Policies**" to go to the security policies settings user interface.
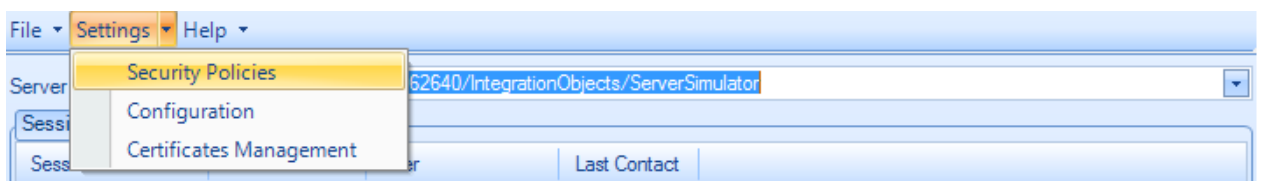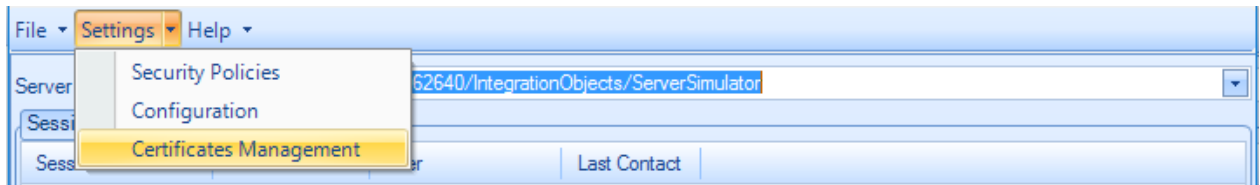

Figure 13: Security Menu Item

- Click on "**Settings→Configuration**" to go to the configuration settings user interface.

Figure 14: Configuration Menu Item

- Click on "**Settings→Certificates Management**" to go to the certificates management settings user interface.

Figure 15: Certificates Management Menu Item

- Click on "**Help→Quick User Guide**" to view the quick user guide, which is the present document.
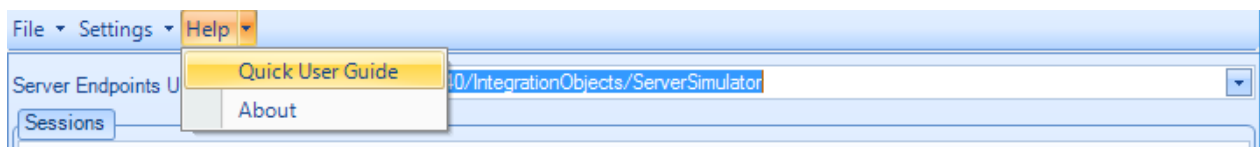
Figure 16: Quick User Guide Menu Item

- Click on "**Help→About**" to get more information about the product.
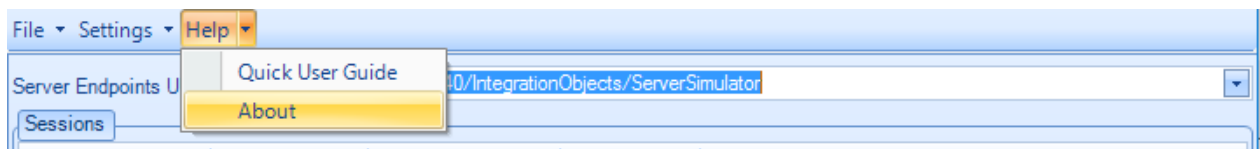
Figure 17: About Menu Item

CONFIGURING THE SECURITY POLICIES SETTINGS

In the Security Policies user interface, you can select a security mode to be associated with the OPC UA Server Simulator Full Edition to instruct the OPC UA client to open a secure channel with it. Only the checked security modes in the user interface below will be available to the OPC UA client.
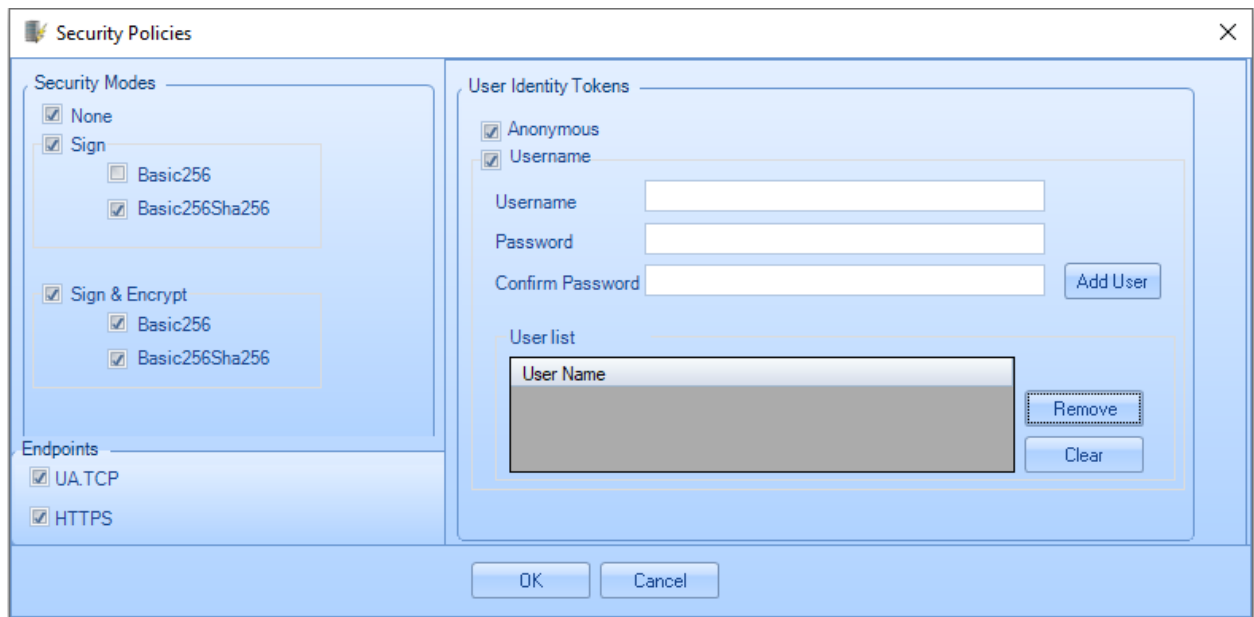
Figure 18: Security Policies User Interface

USING THE CONFIGURATION SETTINGS

In the Configuration Settings user interface, you can configure the port numbers and the server names for TCP and HTTPS connections. You can also change the update rate in milliseconds, which is the data simulation frequency.
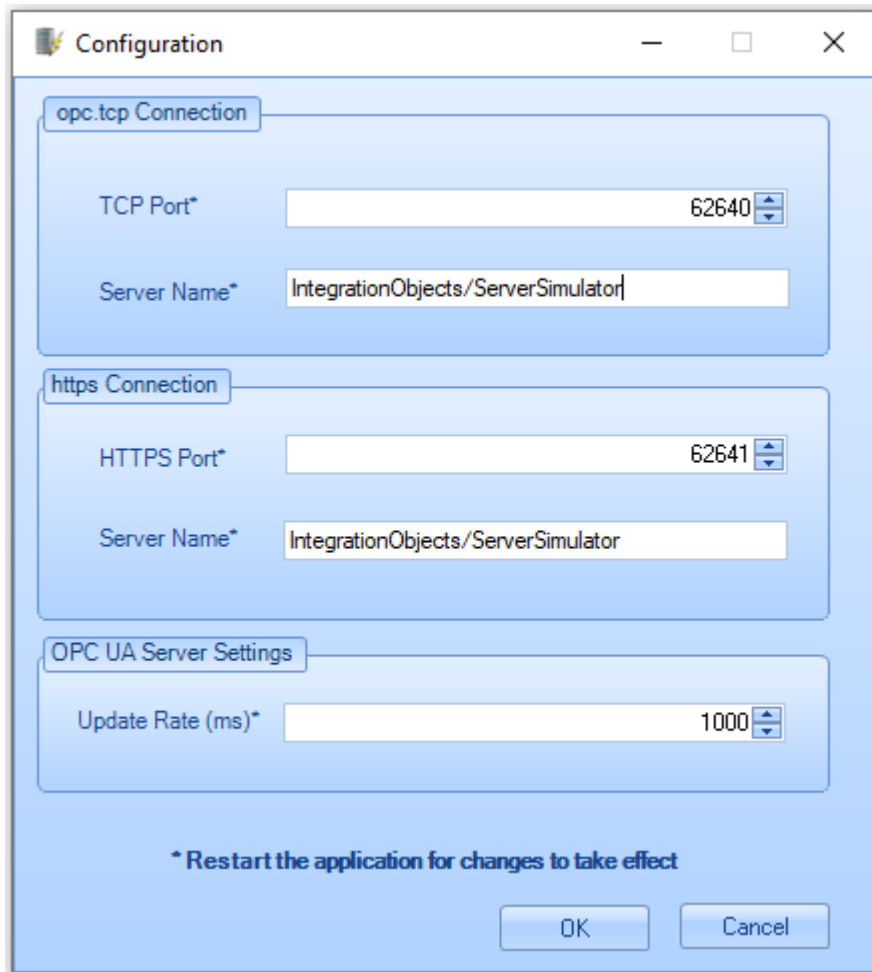
Figure 19: Configuration Settings User Interface

MANAGING THE CERTIFICATES

In the Certificates Management Settings user interface, you can:

- Access the list of certificates: this user interface displays the list of the trusted and the rejected certificates. Users can trust a rejected certificate by right clicking on it and selecting Trust from the displayed menu. They can similarly reject a trusted certificate.
- Import certificate: this option allows users to select a certificate and add it to the list of the trusted ones.
- Remove certificate: this option allows users to remove the selected certificates from the trusted or rejected list.
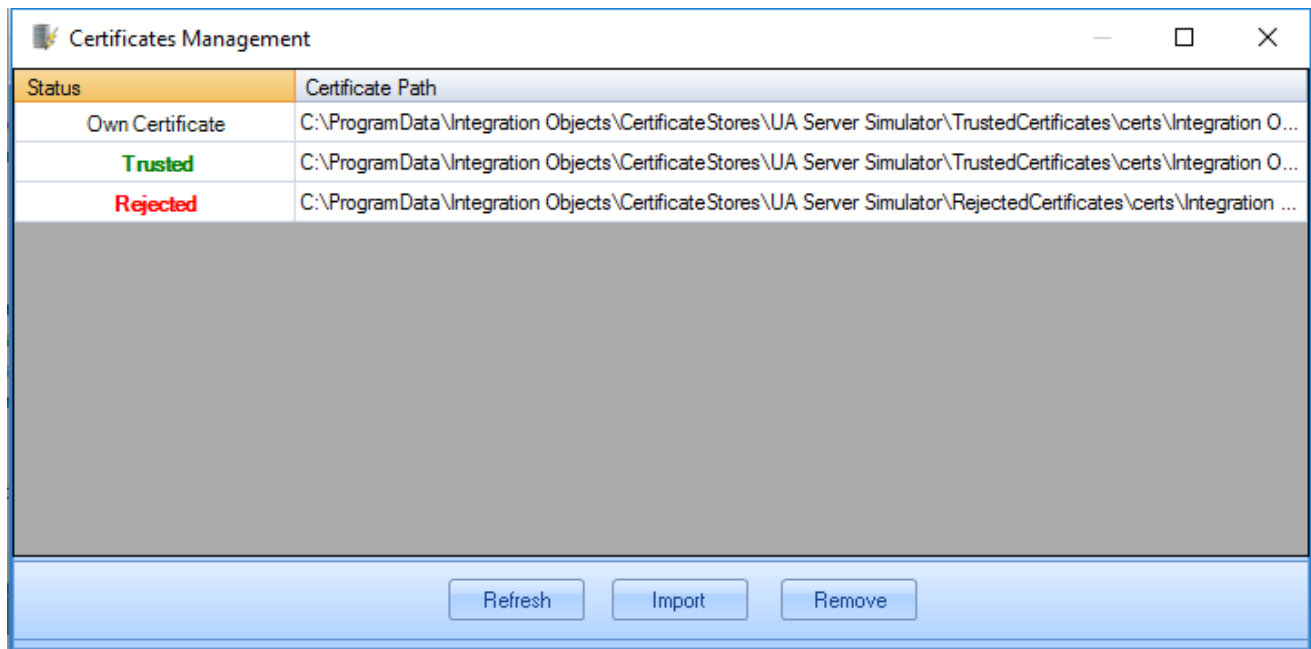
Figure 20: Configuration Settings User Interface

USING THE CSV SIMULATION FILES

The OPC UA Server Simulator uses 2 CSV simulation files:
- « AddressSpace.csv » used to build the address space of the OPC UA Server.
- « ValueSpace.csv » used to simulate the data values of the OPC UA items.

Those 2 files are located at the following path:
.:\Program Files\Integration Objects\Integration Objects' OPC UA Server Simulator Full Edition \OPC UA Server Simulator Full Edition\Data

The default files are illustrated in the figures below:

- **Address Space file**

Tag Name	Data Type	AccessRights	Simulated
Tag1	IO_Int16	RW	FALSE
Tag2	IO_Int32	RW	FALSE
Tag3	IO_Int64	RW	FALSE
Tag4	IO_UInt16	RW	FALSE
Tag5	IO_UInt32	RW	FALSE
Tag6	IO_UInt64	RW	FALSE
Tag7	IO_Double	RW	FALSE
Tag8	IO_String	RW	FALSE
Tag9	IO_Byte	RW	FALSE
Tag10	IO_Boolean	RW	FALSE
Tag11	IO_Int16	R	TRUE
Tag12	IO_Int32	R	TRUE
Tag13	IO_Int64	R	TRUE
Tag14	IO_UInt16	R	TRUE
Tag15	IO_UInt32	R	TRUE
Tag16	IO_UInt64	R	TRUE
Tag17	IO_Double	R	TRUE
Tag18	IO_String	R	TRUE
Tag19	IO_Byte	R	TRUE
Tag20	IO_Boolean	R	TRUE

Figure 21: Address Space File

The "AddressSpace.csv" file is composed of the following fields:
- **Tag Name**: The name of the tag.
- **Data Type**: The OPC UA Server supports the following data types:
  - ✓ IO_Int16
  - ✓ IO_Int32
  - ✓ IO_Int64
  - ✓ IO_UInt16
  - ✓ IO_UInt32
  - ✓ IO_UInt64
  - ✓ IO_Double
  - ✓ IO_String
  - ✓ IO_Byte
  - ✓ IO_Boolean
- **Access Rights:** The access rights of the tag.
- **Simulated:** A Boolean field that indicates if the tag values are simulated or not. For the simulated tags, you can specify the data values to be used for the simulation using the "ValueSpace.csv". Otherwise, the simulator will assign random data values.

- **Value Space file**

Tag11		Tag12		Tag13	
11	good	56	good	47	good
12	good	32	good	14	good
13	good	28	good	85	good
14	good	14	good	125	good
15	good	15	good	24	good
16	good	57	good	69	good
17	good	65	good	36	good
18	good	18	good	18	good
19	good	48	good	84	good
20	good	36	good	64	good

Figure 22: Value Space File

The "ValueSpace.csv" file includes the data values and qualities to be simulated for the tags listed in the "AddressSpace.csv" file.

There are 2 columns for each tag in the "ValueSpace.csv" file:
- The first column starts with the name of the tag then the simulation type of the tag and finally the several data values,
- The second column starts with an empty row and then the values qualities.

In other words, the CSV format is as follows:
- The first line indicates the tag names. Each tag name cell needs to be followed by an empty cell.
- The data values and qualities need be specified starting from the second line. Each couple of columns relates to one tag and is organized as:
  - The first column lists the tag values.
    Note that the tag values list is only allowed when "Simulated" attribute is set to true in the AddressSpace.csv csv file.
  - The second column lists the quality of each value.

As previously indicated, the "ValueSpace.csv" file should include the data of the "AddressSpace.csv" file to be simulated. Note that you do not have to include all of them. You can include only the ones for which you have a specific data set to simulate.

> Note that the simulator keeps by default 120 seconds of historical data per Tag. This duration could be modified by changing "ArchiveLimit" parameter in the "OPCUAServerConfig.ini" configuration file, which is located in the installation folder:
> .:\Program Files\Integration Objects\Integration Objects' OPC UA Server Simulator Full Edition\OPC UA Server Simulator Full Edition\
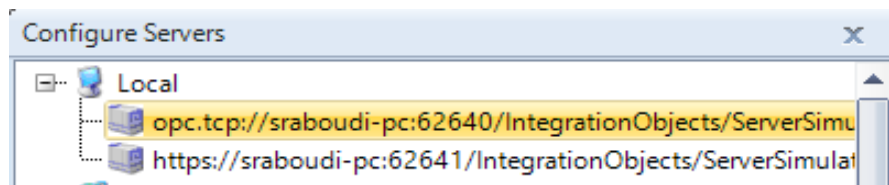
CONNECTING OPC UA SERVER SIMULATOR FULL EDITION

To connect to the OPC UA Simulator, you can:
- Open an OPC UA Client, click **Discover** button and then select the server endpoint's URL from the discovered servers list.
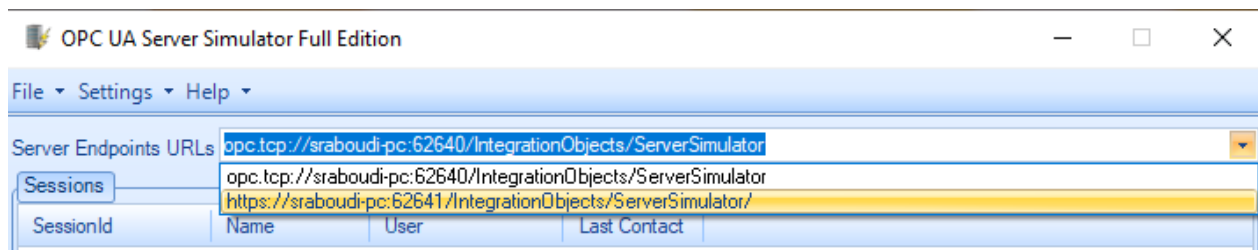

Figure 23: Discover Button of the OPC UA Client.

Figure 24: The discovered servers list.

- Or simply Copy the server's endpoint URL and paste it in the Endpoint URL field of the OPC UA Client.

Figure 25: OPC UA Server Endpoints URLs.

Note that the simulator needs to be registered with the Local Discovery Server(LDS) which collects and publishes information about UA servers in order to enable the OPC UA clients to read the information about the registered OPC UA servers from the LDS.

For more information about Local Discovery Server, see the OPC Unified Architecture Specification Part 12.

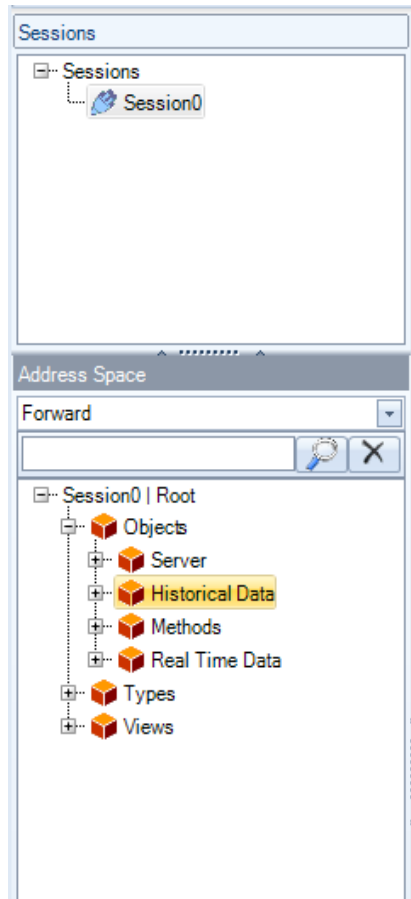After connecting with the OPC UA Client the address space will be displayed as below:

Figure 26: OPC UA Server Address Space.

Then you can monitor real-time data, explore and update history data.

REMOVING OPC UA SERVER SIMULATOR FULL EDITION

To uninstall the OPC UA Server Simulator Full Edition, follow the steps below:

1. Click the "**Uninstall UA Server Simulator Full Edition**" shortcut available in the start menu, as shown in the figure below:
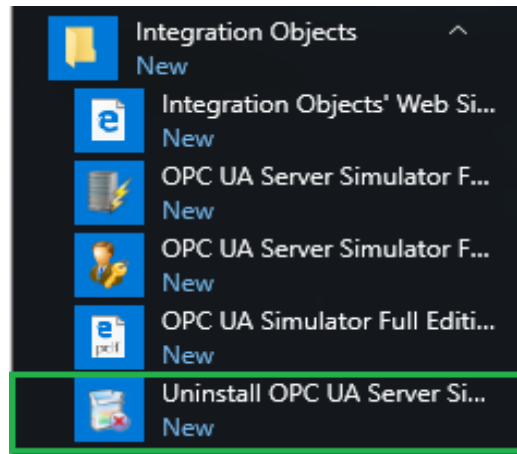
Figure 27: Uninstall Shortcut in the Start Menu
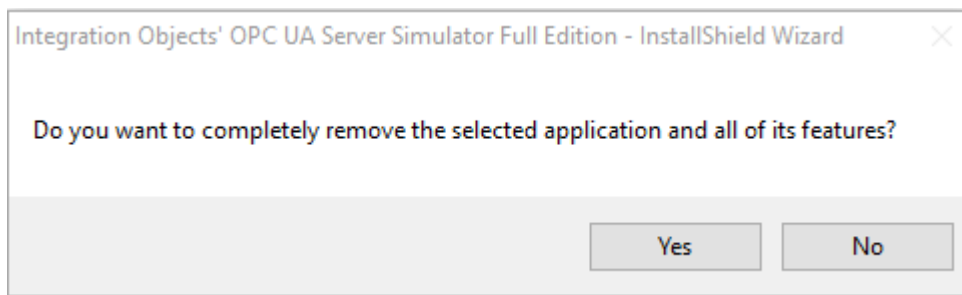
The following dialog box will appear:

Figure 28: Uninstall the OPC UA Server Simulator Full Edition

2. Click the **Yes** button to start uninstalling.

3. The wizard will then take you through the removal steps. At the end, click **Finish** when the un-installation is complete.

If you are using Windows 10, Windows Server 2012 or Windows Server 2016 operating system, the uninstaller needs to be run from the start menu as shown below.
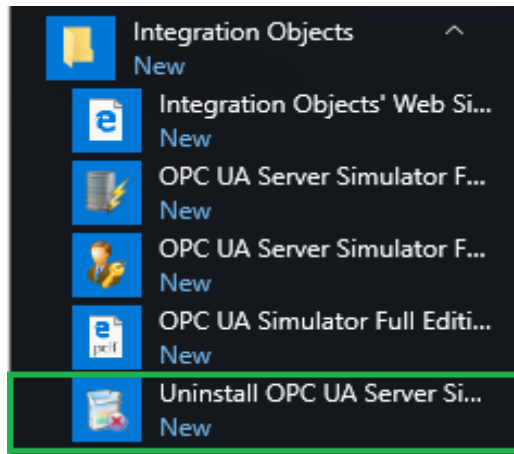
Figure 29: Windows 10 Startup Menu Uninstall Shortcut

The OPC UA Server Simulator Full Edition can also be manually removed as follows:

1. Go to the **Control Panel**.

2. Click **Programs and Features**

3. In the **Programs and Features** dialog screen, select **Integration Objects' OPC UA Server Simulator Full Edition**.

4. Click **Uninstall** then **OK**.

ACTIVATING THE FULL LICENSE

To activate the full license you should launch the License Authorization tool existing under the OPC UA Server Simulator Full Edition installation folder, or start it directly from the start up menu:
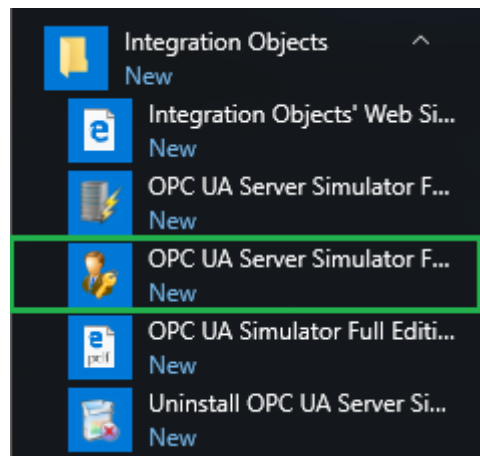
Figure 30: Windows 10 Startup Menu License Authorization tool shortcut

If the License Authorization tool shows that the demo has expired and you want to activate it using your full activation license, you should follow the following steps:

1. Open the License Authorization tool and click on the **Register** button.
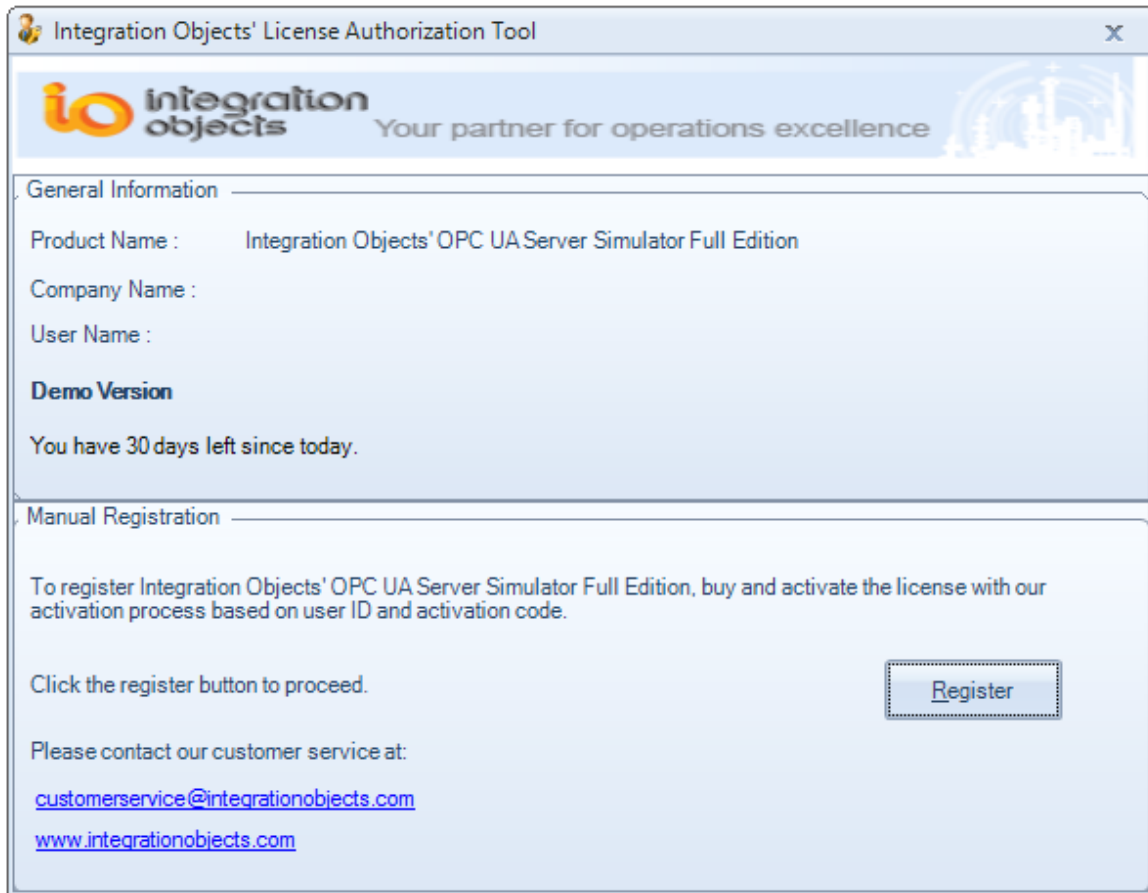
Figure 31: License Authorization

2. Copy and send the User ID to the sales team so they can generate the dedicated activation code.

Figure 32: License Registration

3. Copy and paste the received activation code and click on the **Register** button.

For additional information on this guide, questions or problems to report, please contact:

Offices
- Americas: +1 713 609 9208
- Europe-Africa-Middle East: +216 71 195 360

Email
- Support Services: customerservice@integrationobjects.com
- Sales: sales@integrationobjects.com

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