Reliance
Industrial SCADA/HMI system

# Reliance 4

## OPC SERVER

GEOVAP

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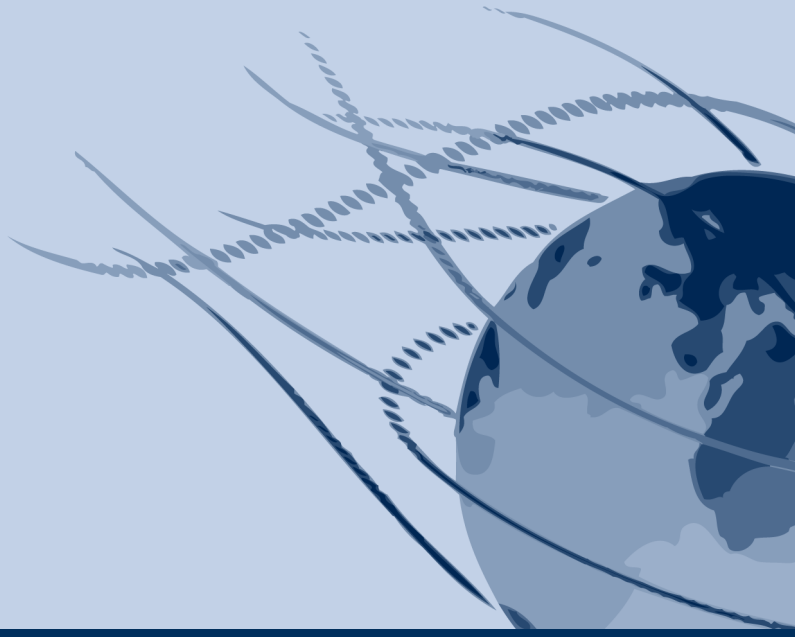
## OPC SERVER III



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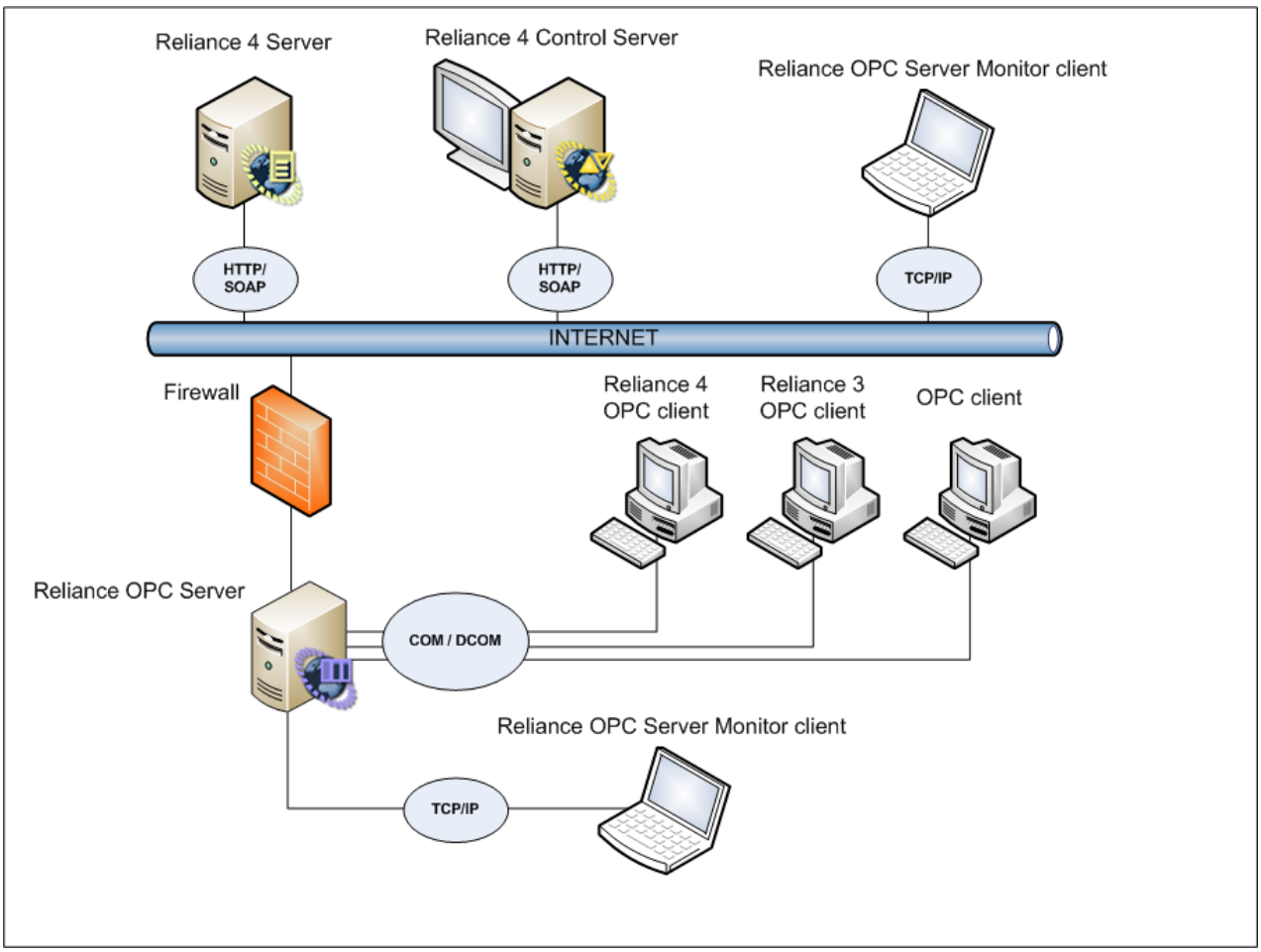
# 1 Reliance OPC Server

## 1.1 About Reliance OPC Server

**Reliance OPC Server** is a module of the **Reliance 4** system which allows access to the visualization project's tags via the OPC standard interface. Thanks to this, it is possible to transfer data from the visualization to the information systems operating at a customer, e.g., Customer Information System or other **SCADA** system which is an OPC client and with which data exchange is required. **Reliance OPC Server** can be used even if it is necessary to connect two different projects of the **Reliance** system or projects operating in different versions of **Reliance**, e.g., versions 3 and 4.




Reliance OPC Server - connection diagram

## 1.2 Reliance OPC Server SW Modules

**Reliance OPC Server** consists of the following SW modules:

### 1.2.1 OPC Server

It is an application which operates as a Windows service providing data to OPC clients. **Reliance OPC Server** is based on the **COM** (Component Object Model) technology and supports the OPC DA 3.0 specification. The data sources of the OPC Server are the **Reliance** data servers (Reliance 4 Server and Control Server).

### 1.2.2 Monitoring Server

Monitoring Server is implemented into **Reliance OPC Server** and provides communication with Monitoring Client.

### 1.2.3 Monitoring Client

It is a tool for monitoring and control of **Reliance OPC Server**. Communication between the **OPC Server** and Monitoring Client runs via the **TCP** protocol. Remote control of the server (control from another computer within the network) can also be carried out using Monitoring Client.

### 1.2.4 Systray Client

This is a tool indicating the current status of the **OPC Server** as a status icon in the Windows taskbar.

# 2 Installation

## 2.1 HW and SW Requirements

**Reliance OPC Server** is intended for operation using MS Windows systems. For its operation, it requires the **Microsoft .NET framework 2.0** runtime environment.

## 2.2 OPC Server Startup

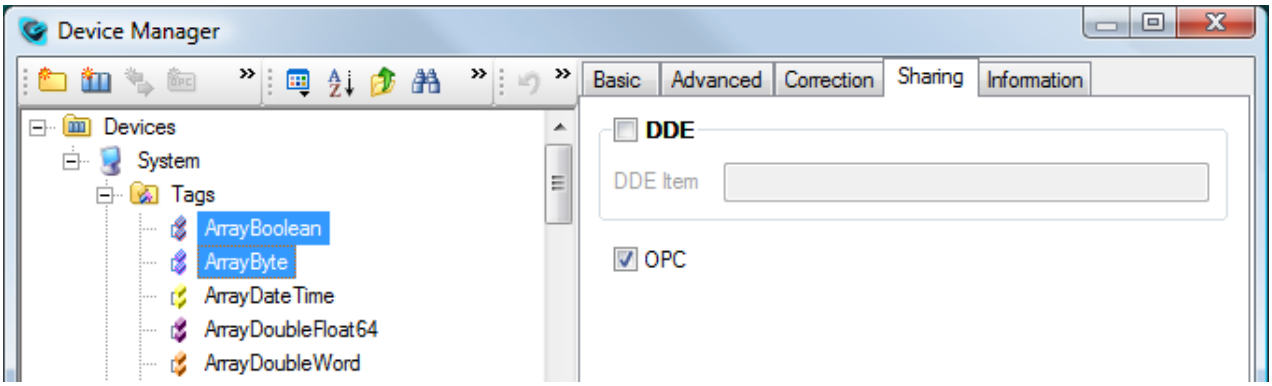
The server is run automatically at the first OPC client connection. To provide current data from the **Reliance** data servers, it is necessary to activate the visualization project by Reliance Control Server or Reliance Server.

# 3 OPC Server Configuration

The configuration of **Reliance OPC Server** is performed by Monitoring Client. For proper functioning of the OPC Server, it is necessary to decide which tags should be provided by the server. This is carried out in the Reliance Design development environment.

## 3.1 Reliance Design Development Environment

Providing the connected OPC clients with the visualization project's tags is performed by setting a parameter to a particular tag. After a tag is selected in the *Device Manager*, sharing with OPC clients can be enabled or disabled in the *Sharing* tab. Multiple settings can be carried out for a selected group of tags. The executed changes will come out after they are saved and the project is run.




**Reliance Design - Device Manager**

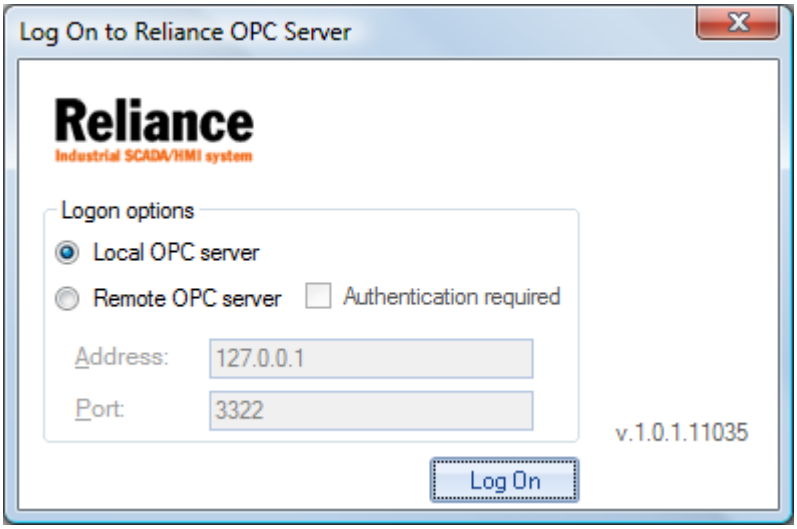
## 3.2 Monitoring Client

### 3.2.1 Monitoring Client Startup

Monitoring Client can be launched either by clicking on the icon in the Windows taskbar or by using the shortcut in the Start menu.

### 3.2.2 Log On to Reliance OPC Server

The dialog window *Log On to Reliance OPC Server* is intended for connecting Monitoring Client to **Reliance OPC Server**. Monitoring Client can be connected in one of the following ways:




**Reliance OPC Server - Log On to Reliance OPC Server**

**a) Connection to a local server**

This option allows for connection of Monitoring Client to the local **Reliance OPC Server**. If the server is not running (no OPC client is connected to it), then it is launched.

If Monitoring Client is run via the icon in the Windows taskbar, it is automatically connected to the local server without displaying the *Log On to Reliance OPC Server* dialog window.

**b) Connection to a remote server**

This option allows for connection of Monitoring Client to the remote **Reliance OPC Server** . To make a connection, it is essential to enter a host computer (IP address or computer name) and Monitoring Server's TCP port. If authentication is required, it is necessary to enter your access name and password.

Remote connection via Monitoring Client can be realized, provided that **Reliance OPC Server** is running.

### 3.2.3 The "Start" Window

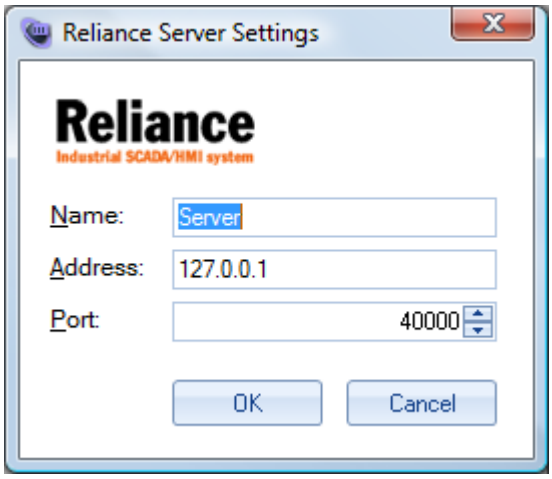
After Monitoring Client has been started and logged in to **Reliance OPC Server**, the *Start* window is displayed. In this window, information is displayed as follows: Monitoring Server URI, logged-on user name, list of available windows, and version number of Monitoring Client.

### 3.2.4 The "OPC Server Information" Window

This window is divided into two parts. The upper part consists of information about **Reliance OPC Server** and the operating system on which the server runs. Among items displayed here are a GUID of the server, operating system's version, overall memory status of the server, etc. The lower part of the window consists of a list of the available tags of Reliance OPC Server. For each tag in the list, information about its current value, quality and timestamp are displayed.

### 3.2.5 The "Reliance 4 Servers" Window

This window is used to configure individual connections between **Reliance OPC Server** and **Reliance** data servers. After the server is installed, connection to a local data server on port 40000 is set as default. Connections can be added, modified, and deleted using commands in the *Tasks* menu.



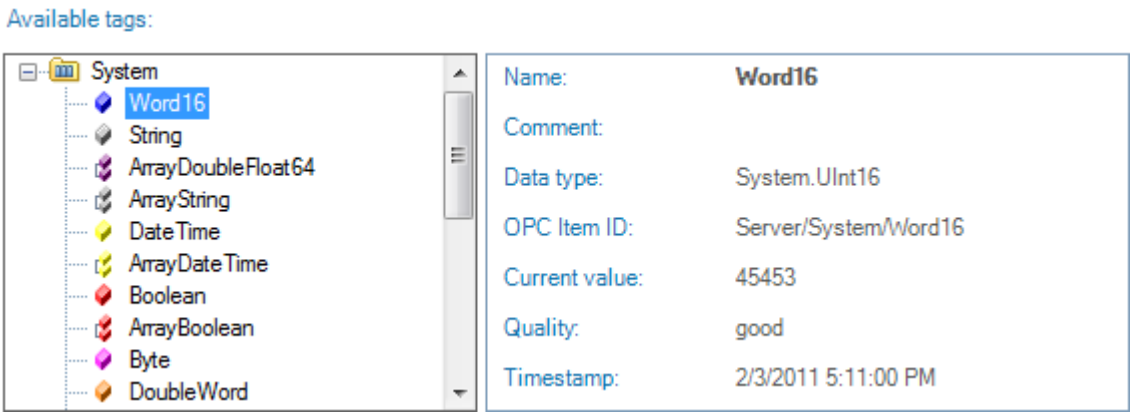

**Reliance OPC Server - Reliance Server Settings**

After adding the new server, a new tab bearing the server's name in the header is added to the main part of the window. Each tab contains a window with information regarding the visualization project running in the **Reliance** data server. This window allows for displaying the data server's web interface by clicking on the address in the table header.


**Reliance OPC Server - About visualization project**

The "Status" item in this window is very important. It indicates the current status of the data server connection. The following states can be indicated: Disconnected (gray color - disconnected), Connecting (orange color - connection is being established), and Connected (green color - connection established).

There is a list of available tags of the data server in the left lower part of the window.




**Reliance OPC Server - Available tags of the visualization project**

By clicking on a particular tag, detailed information on this tag is displayed in the right lower part:

- name
- comment
- data type
- array length (only displayed if the tag is of an array type)
- OPC item ID
- text for logical 1 (text value for Boolean-type tags with the value of 1 *)
- text for logical 0 (text value for Boolean-type tags with the value of 0 *)
- units (°C, kPa, MPa, etc. *)
- high critical limit *
- high warning limit *
- low warning limit *
- low critical limit *
- current value
- quality
- timestamp

* only displayed if the value is defined

### 3.2.6 The "Events" Window

This window is intended for viewing **Reliance OPC Server**'s events. All events are stored in text files in this directory:

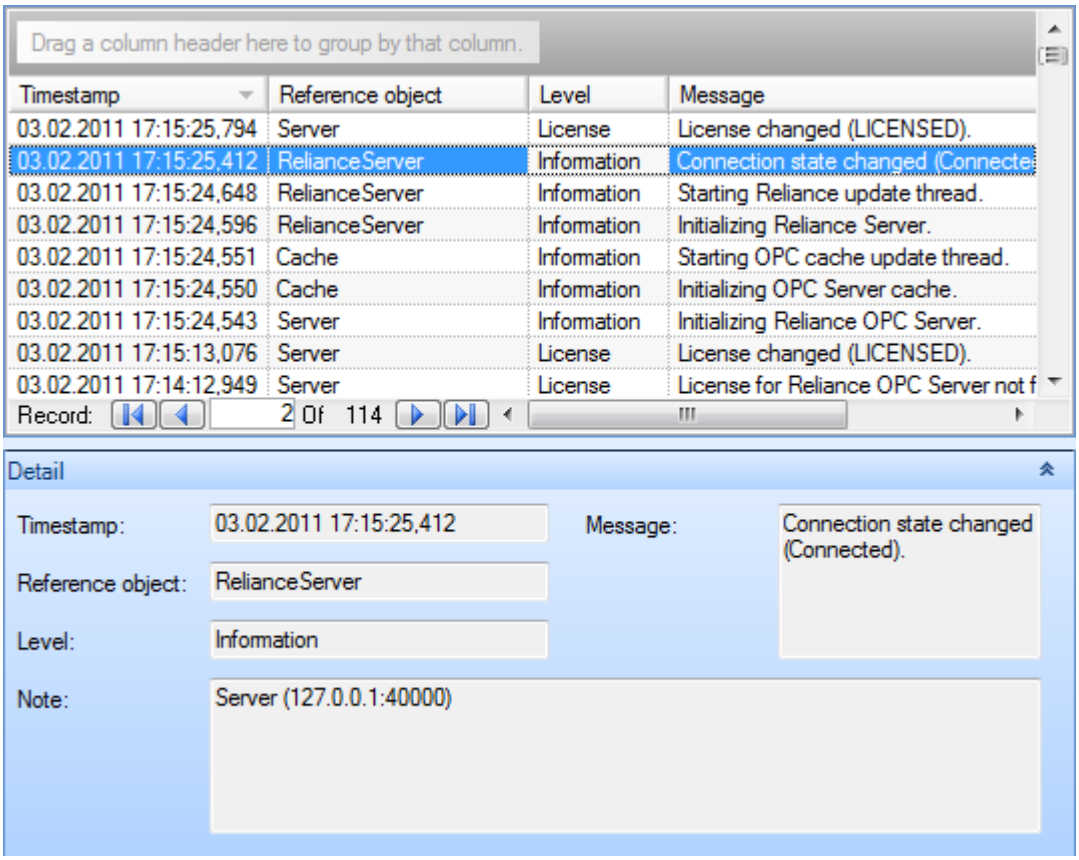
`C:\Users\Public\Documents\GEOVAP\RelianceOPCServer\Logs`

(valid for Windows Vista and Windows 7).

For each calendar month, a separate file is created. Its name consists of the current year and month number (e.g., file `201003.log` for the March 2010 report). Since these files are text-based, they are compatible with text editors, such as Notepad.

The *From* and *To* parameters in the left side of the window only allow displaying of entries in the given time range. The *Event Type* combo box allows filtering of entries by type.

The right upper part of the window is intended for listing all server events that comply with the set up filter. You can sort the list by clicking on the column header. Each column can be grouped by contents by dragging the column header into the space above the table. The right lower part of the window is intended for displaying detailed information of the selected event.




**Reliance OPC Server - Events**

### 3.2.7 Options

By clicking on the main icon  of Monitoring Client, which is located in the left upper part, the main application menu is displayed. The *Options* command is intended for opening a dialog window, which is used to set behavior of all **Reliance OPC Server** modules. Most of the settings are allowed to be changed only if Monitoring Client is connected to a running **Reliance OPC Server**. The settings are stored in separate files in the following directory:

`C:\Users\Public\Documents\GEOVAP\RelianceOPCServer\Settings`

(valid for Windows Vista and Windows 7).

These files are in XML format.

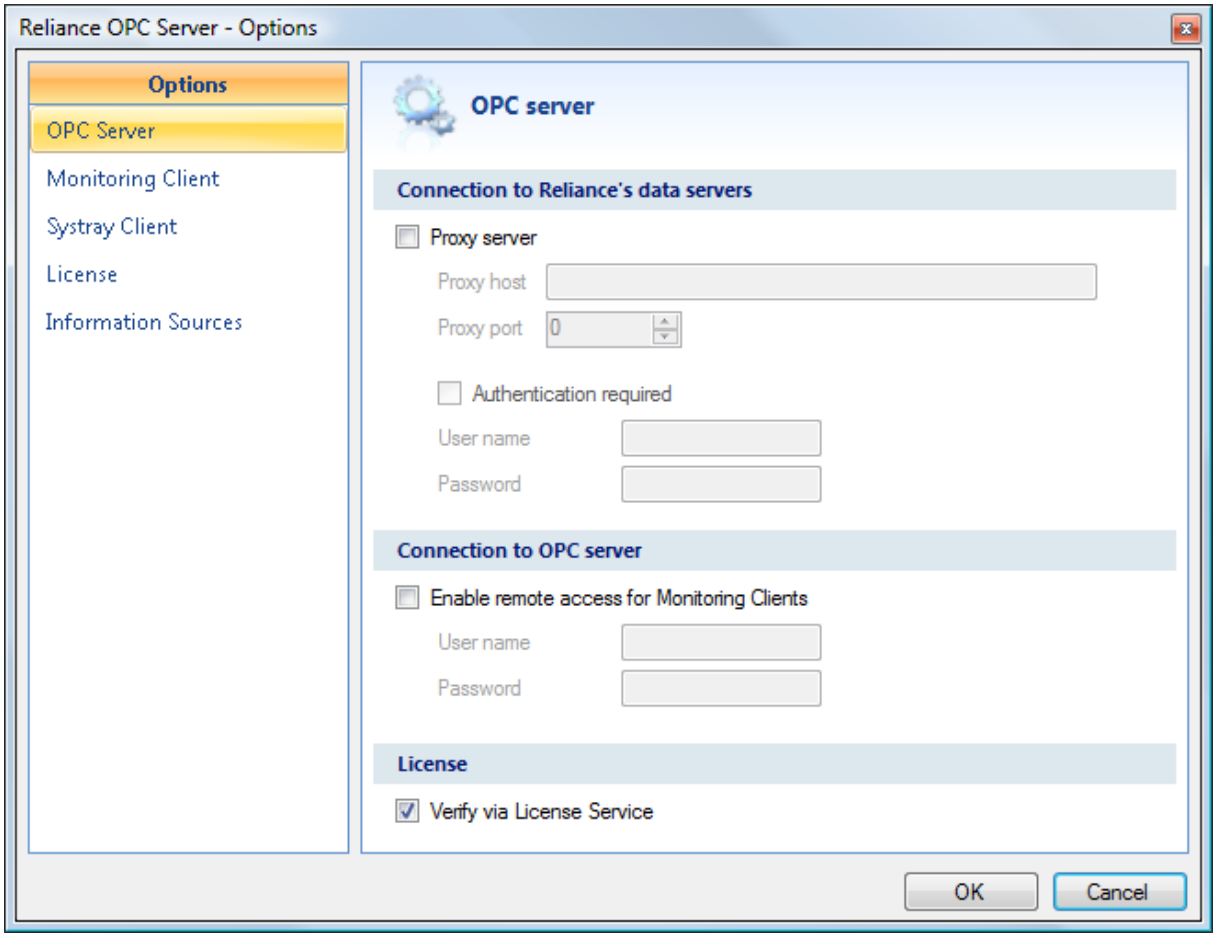
For clarity sake, the Options window is divided into several sections:

### a) OPC Server

This section is designed for defining a proxy server which is used for connecting to **Reliance** data servers.

Remote connection between Monitoring Client and **Reliance OPC Server** can also be enabled in this section. Using a user name and password, remote connection can be protected from unauthorized access. By default, the option of remote connection is not selected.

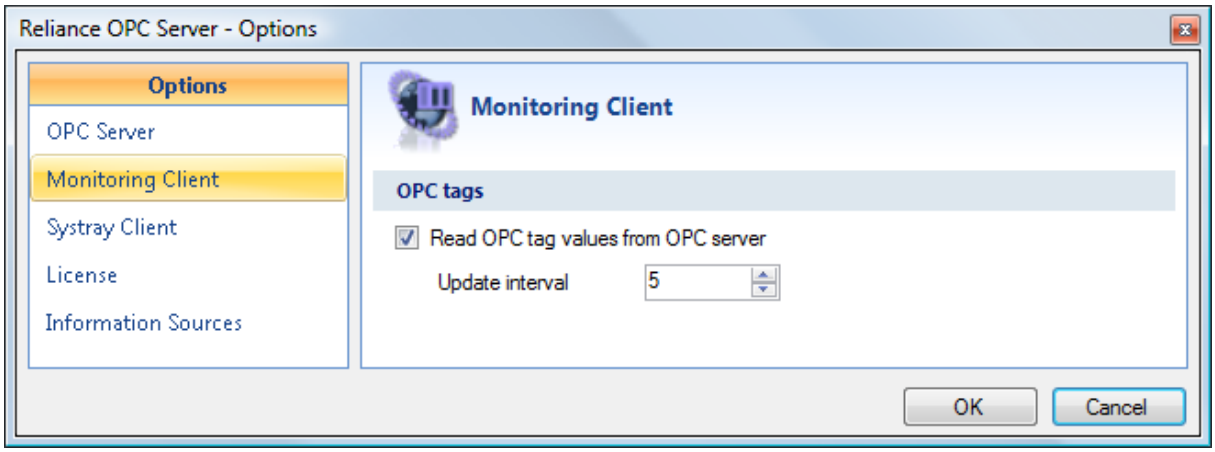
The last option in this section is a license detection method. By default, the license detection method is set to "Verify via License Service".




**Reliance OPC Server - Options - OPC Server**

### b) Monitoring Client

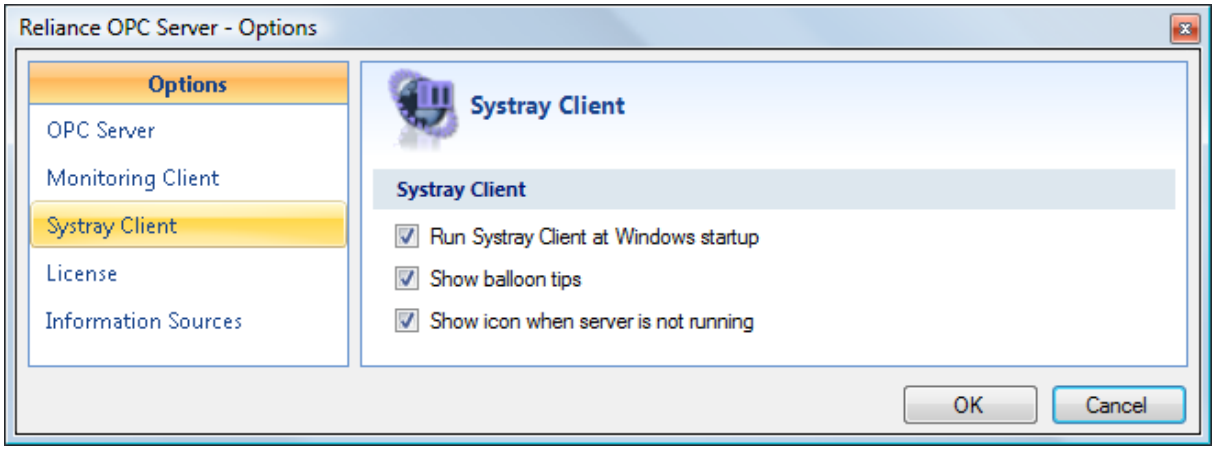
This section contains options for automatic reading of **Reliance OPC Server** tag values in a given interval.




**Reliance OPC Server - Options - Monitoring Client**

### c) Systray Client

Here, it is possible to modify settings for Systray Client. Systray Client can be run automatically at Windows startup. Also, information messages can be displayed. For these purposes, appropriate options are available in the Systray Client section. Furthermore, you can specify whether the Systray Client icon should be displayed even if **Reliance OPC Server** is not running.




**Reliance OPC Server - Options - Systray Client**

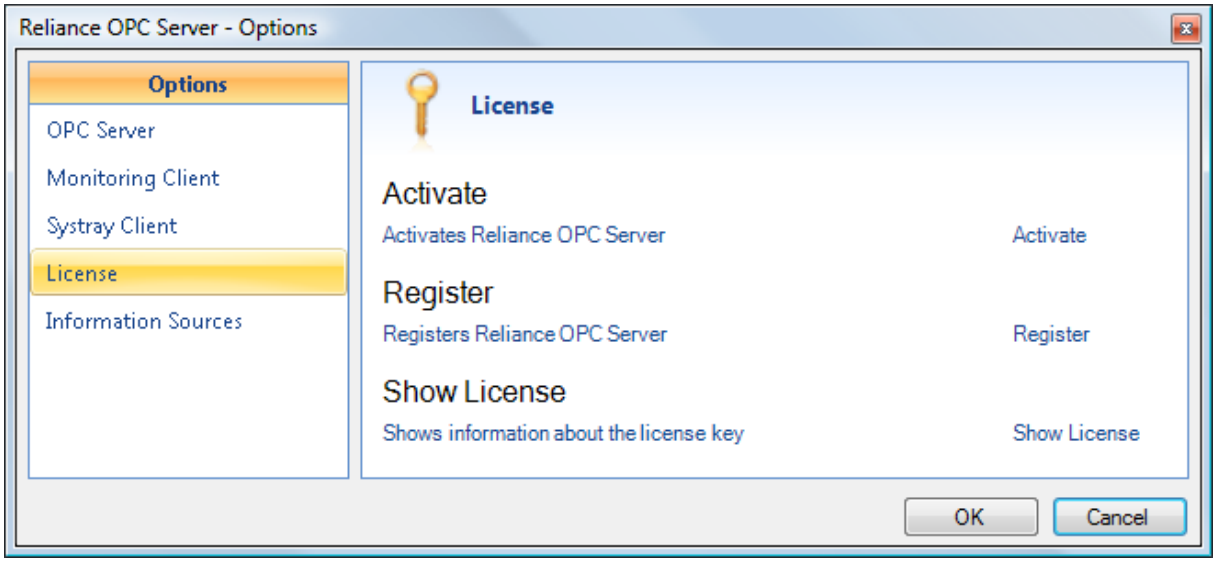
### d) License

This section consists of the following commands:

**Activate** - it is intended for displaying the license activation wizard. Activation should be only performed if a so-called SW key is used. Detailed activation instructions are described in the separate document License Activation.

**Register** - it is used for registering the **Reliance OPC Server** license. A dialog window for selecting the registration file is displayed by clicking on the Registration command. The registration file can be generated via the License Key Utility (for more information about registration, see the separate License Key Utility document).

**Show License** - this command is used for displaying a dialog window with detailed information about the connected license key (*License Key Records*).




**Reliance OPC Server - Options - License**

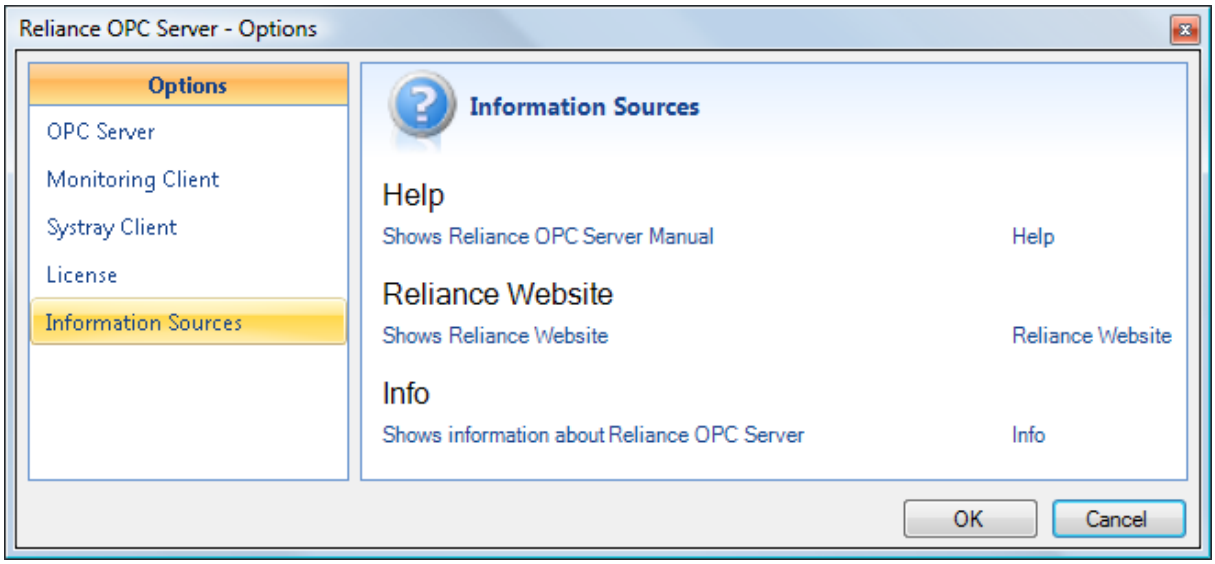
### e) Information Sources

This section contains the following commands:

**Help** - command for displaying the document of the identical name.

**Reliance Website** - command for displaying Reliance Web pages in the default browser.

**Info** - command for displaying the window with information about **Reliance OPC Server**. This window provides information about the version, license, registration, and operating system. By clicking on the serial number, you can find out how the license is verified or display information about the connected license key (*License Key Records*).




**Reliance OPC Server - Options - Information Sources**

# 4 Appendices

## 4.1 Glossary

**OPC** (OLE for Process Control)

- A set of specifications that are designed to enable applications to share industrial data.

**SCADA** (Supervisory Control And Data Acquisition)

- It is software monitoring real control systems, for example, which are based on PLC (Programmable Logic Controller) or other HW devices.

**COM** (Component Object Model)

- It is a binary and network standard, which enables any two components to communicate regardless of on which computer they are running (if connected) and in which language they are written.

**OPC DA** (OPC Data Access)

- It is a standard for real-time current data exchange.

**TCP port**

- It is a unique number which enables computer applications to communicate.

**URI** (Uniform Resource Identifier)

- It is a string with a defined structure, which specifies the source of information mainly to be used via a computer network, especially the Internet.

**GUID** (Globally Unique Identifier)

- It is a special type of system identifier providing a unique reference number to an OPC server.

**URL** (Uniform Resource Locator)

- It is a string with a defined structure, which specifies the location of information sources on the Internet.

**XML** (Extensible Markup Language)

- It is a common markup language developed and standardized by the W3C. It makes it easy to create particular markup languages for various purposes and various data types.