Integration Objects'

OPC Driver for Cisco WLC

OPC Driver for Cisco WLC

Version 1.0 Rev.0

USER GUIDE

OPC Compatibility

OPC Data Access 1.0a
OPC Data Access 2.00
OPC Data Access 2.05a
OPC Data Access 3.00

OPC Driver for Cisco WLC User Guide Version 1.0 Rev.0
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PREFACE

ABOUT THIS USER GUIDE

This guide:

- Describes the main features offered by Integration Objects' OPC Driver for Cisco WLC.
- Lists the system requirements for installing and running OPC Driver for Cisco WLC,
- Explains how to configure the OPC Driver for Cisco WLC,
- And details how to use and run the OPC Driver for Cisco WLC.

TARGET AUDIENCE

This user guide is intended for users who are looking for applications that can collect data from Cisco WLC and push those data to an OPC DA Server. Knowledge of the basics of the Cisco WLC is a prerequisite. It is also assumed that the user has some prior knowledge of OPC Data Access Classic (OPC DA).

DOCUMENT CONVENTIONS

Convention	Description
`Monospaced type`	Indicates a file reference
	Information to be noted

CUSTOMER SUPPORT SERVICES

Phone	Email
Americas: +1 713 609 9208 **Europe-Africa-Middle East** +216 71 195 360	Support: customerservice@integrationobjects.com Sales: sales@integrationobjects.com Online: www.integrationobjects.com

INTRODUCTION

1. Overview

Integration Objects' OPC Driver for Cisco WLC is a plug and play OPC Classic driver that allows you to monitor your Cisco Wireless LAN Control (WLC) from your control system or SCADA. In fact, this driver runs as a service in the background in order to collect data and information from a Cisco WLC in real-time and transfer those data to your OPC DA Server.

2. Architecture

The following diagram illustrates the OPC Driver for Cisco WLC typical system architecture.

Figure 1: OPC Driver for Cisco WLC Architecture

3. Features

The main features of OPC Driver for Cisco WLC are:

- Intuitive graphical user interface allowing to:
  - Configure unidirectional publish service from a Cisco WLC to an OPC DA Server
  - Configure a WLC as a data source
  - Discover local and remote OPC DA servers
  - Configure an OPC DA Server as a data destination
  - Map WLC data to OPC items in the OPC DA Server via drag and drop or CSV files import/export
  - Start and Stop the publisher service
- Transfer of Cisco WLC data to OPC DA Server in real-time
- Monitoring the communications with the configured Cisco WLC and OPC DA Server
- Automatic reconnection with the configured Cisco WLC and OPC DA Server after communication glitches
- Running as a Windows Service in the background

4. Operating Systems Compatibility

OPC Driver for Cisco WLC supports the following operating systems:

- Windows 10
- Windows 8
- Windows 7
- Windows Server 2019
- Windows Server 2016
- Windows Server 2012
- Windows Server 2008

5. OPC Compatibility

- OPC Data Access 1.0a.
- OPC Data Access 2.00.
- OPC Data Access 2.05a.
- OPC Data Access 3.00.

GETTING STARTED

1. Pre-Installation Considerations

In order to properly run the OPC Driver for Cisco WLC, the following software components need to be installed on the target system:

- .NET Framework version 4.6.1 or higher
- The OPC core components 3.00, which consist of all shared OPC modules including the DCOM proxy/stub libraries, the OPC Server Enumerator, .NET wrappers, etc.

2. Installing and Running

To install the OPC Driver for Cisco WLC:

1. Right click on the Integration Objects' OPC Driver for Cisco WLC installation package and select "Run as administrator" from the displayed menu. The installation welcome dialog box will appear.

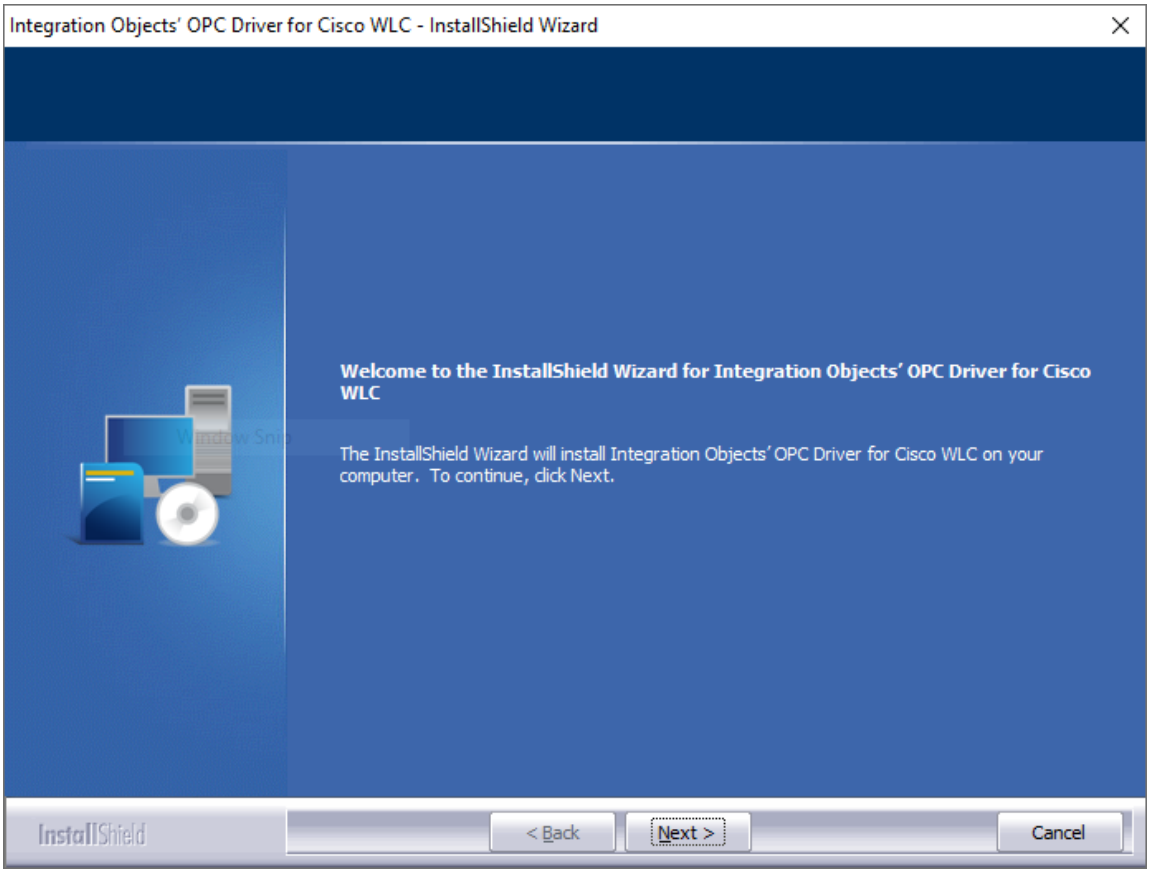

Figure 2: Installation Welcome Dialog

2. Click the **Next** button. The license agreement will be displayed.

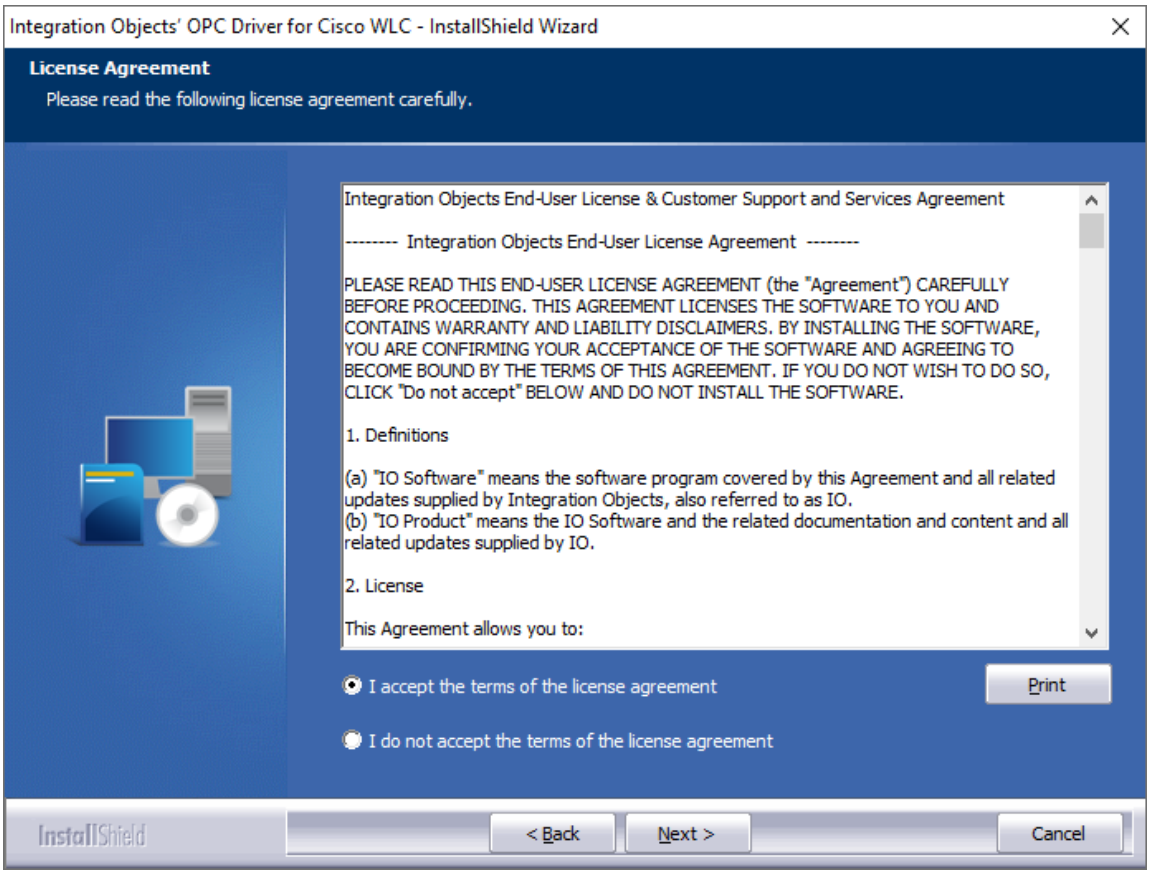

Figure 3: License Agreement Dialog

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.

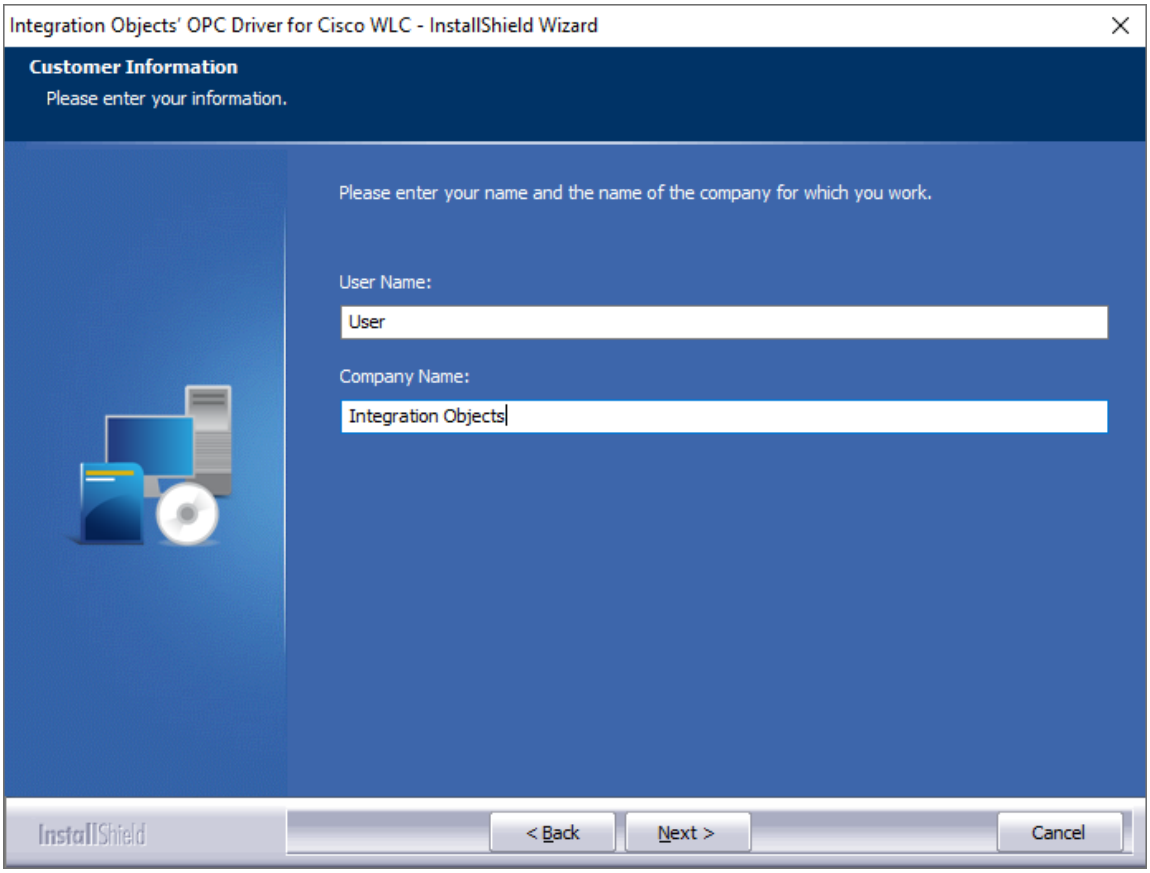

Figure 4: Custom Information Dialog

4. Add the user name and the company name and then click the **Next** button. The dialog box for choosing the OPC Driver for Cisco WLC deployment version will be displayed.

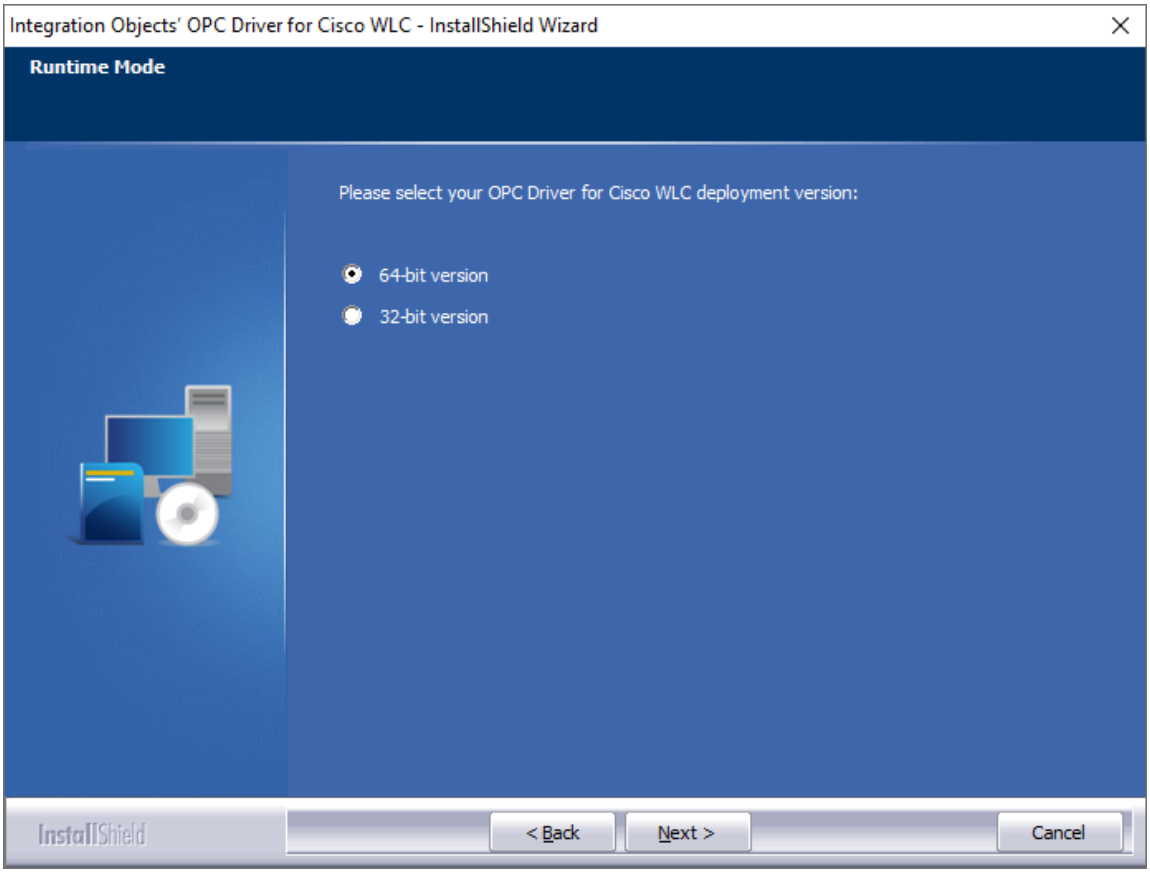

Figure 5: Deployment Version Dialog Box

Some OPC servers that are 32-bit work only with 32 bit OPC clients. If this is your case, make sure to select the "32-bit version" option.

5. After selecting the OPC Driver for Cisco WLC deployment version, the dialog box for choosing the destination folder will be displayed.

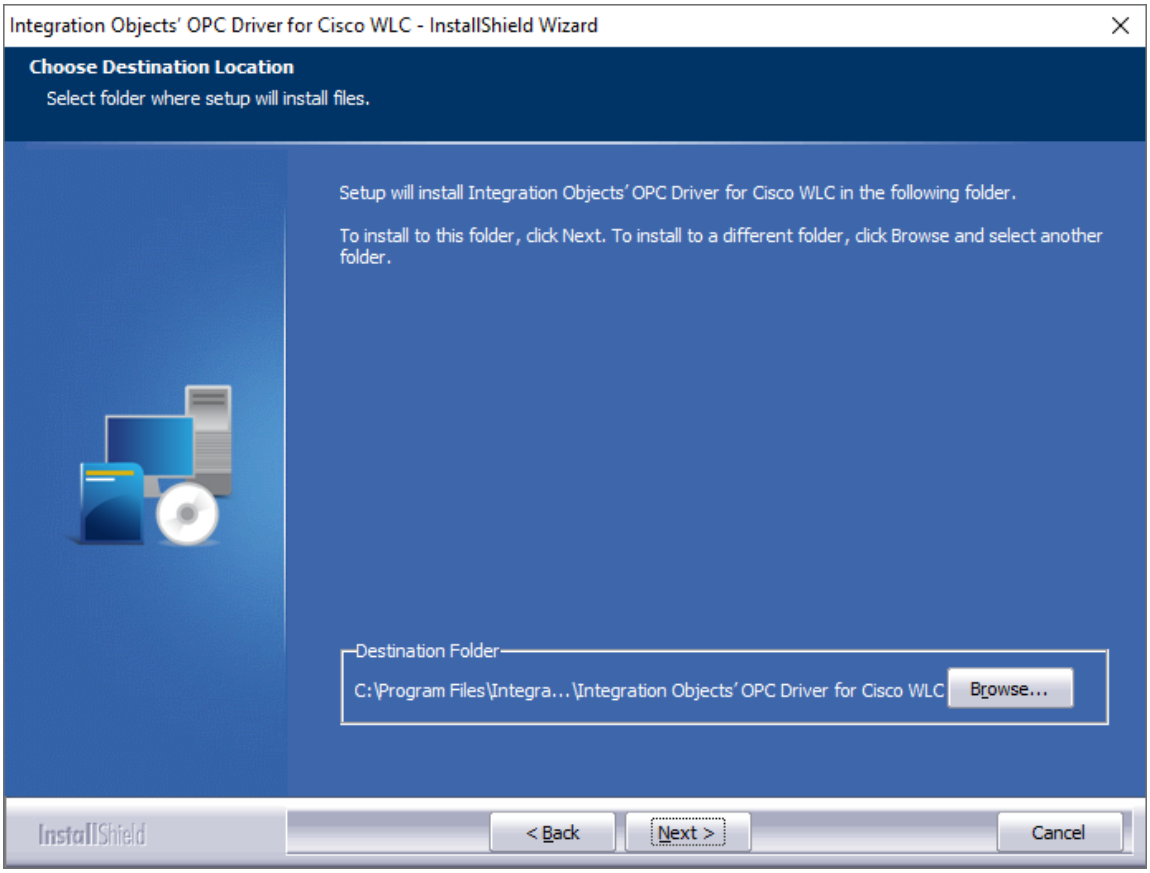

Figure 6: Destination Folder Dialog

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.

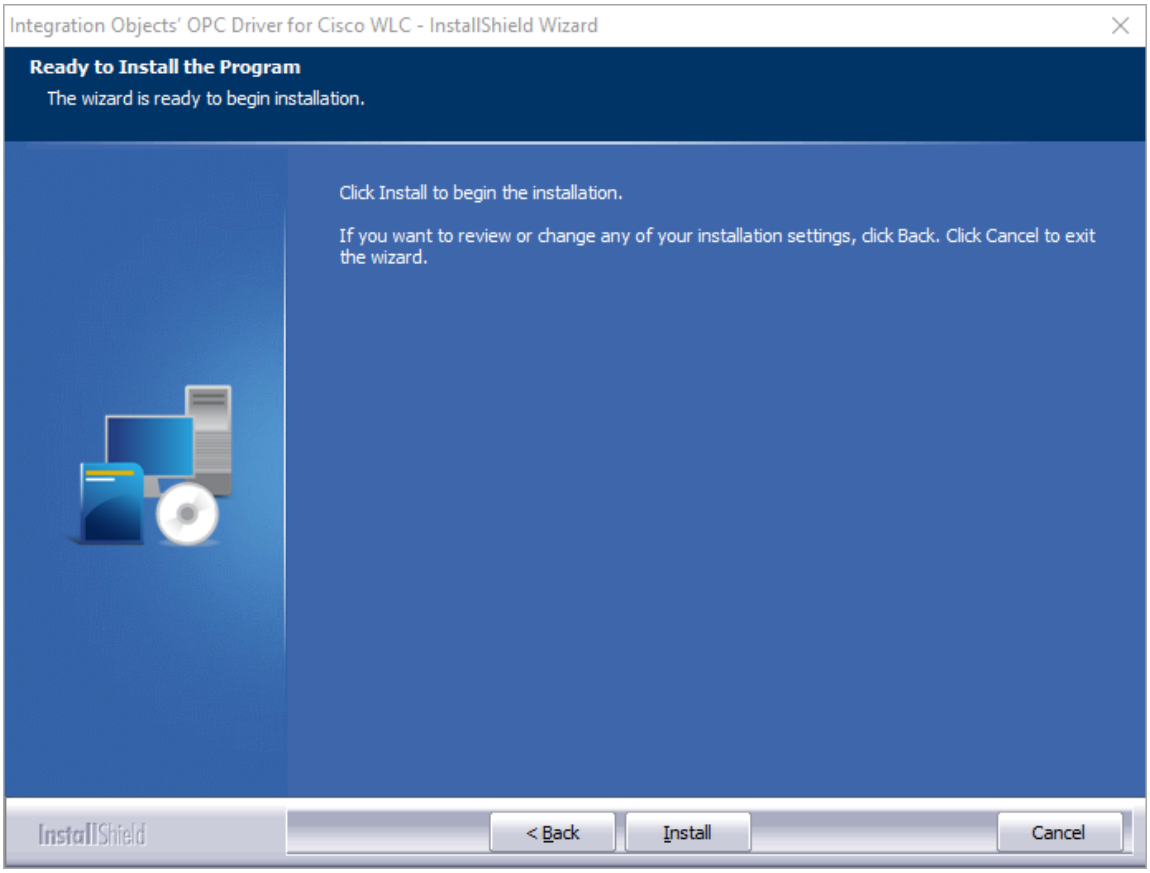

Figure 7: Installation Dialog

7. Click the **Install** button to start installation. The setup will then copy the necessary files to the selected destination folder, create shortcut icons to launch the OPC Driver for Cisco WLC and license authorization program from the start menu. It will also make an un-installation entry in the Programs in the Control Panel.

8. Before the completion of the installation, the following dialog will be displayed in order to configure the user account that will be used to run the OPC Driver for Cisco WLC service.

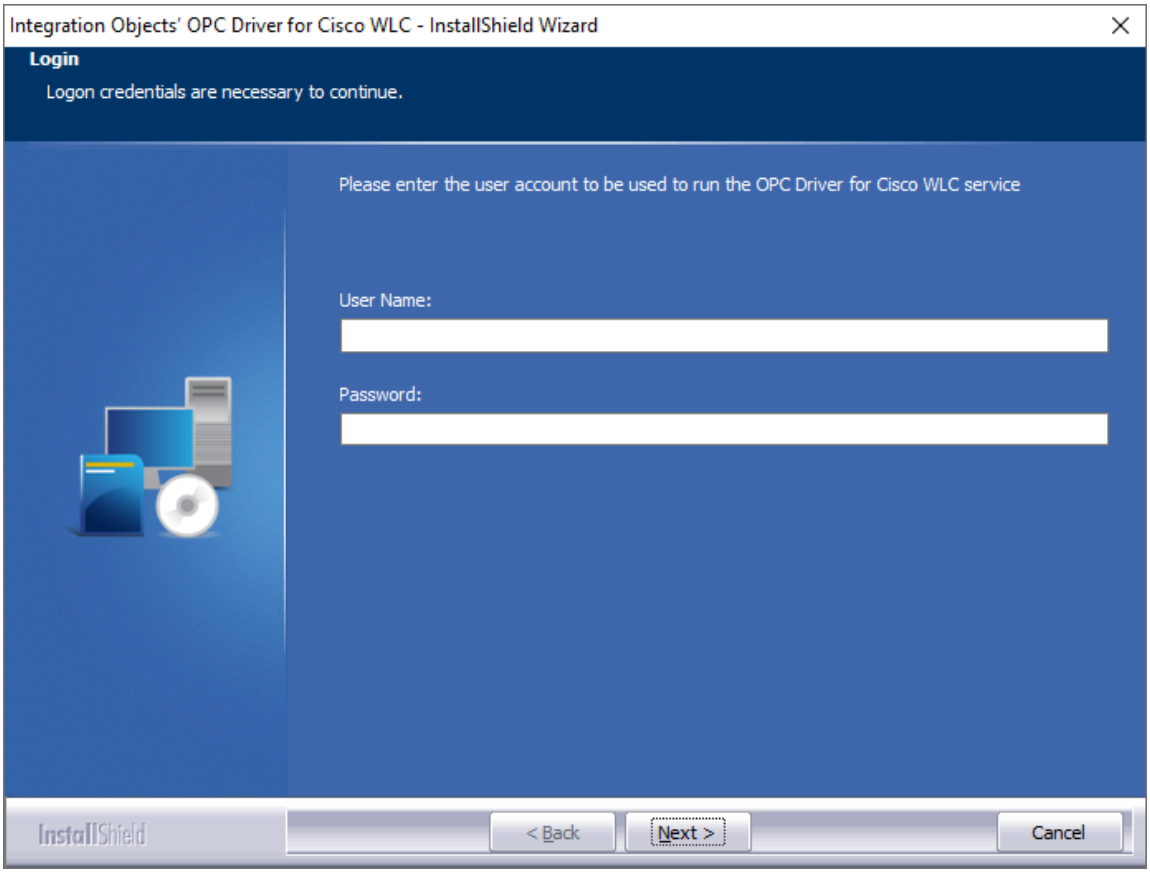

Figure 8: Service Log on

If you do not enter a valid account, the Local System account will be used to run the service. You can still modify this configuration after the installation using the Windows services manager. Make sure that the configured account has the right to log on as a service and to connect to your OPC Server and read data.

9. If the OPC Core Components are not installed in your machine, you can select the "Install OPC Core Components" option as illustrated in the figure below. This will prompt the install of the OPC Core Components provided by OPC Foundation.

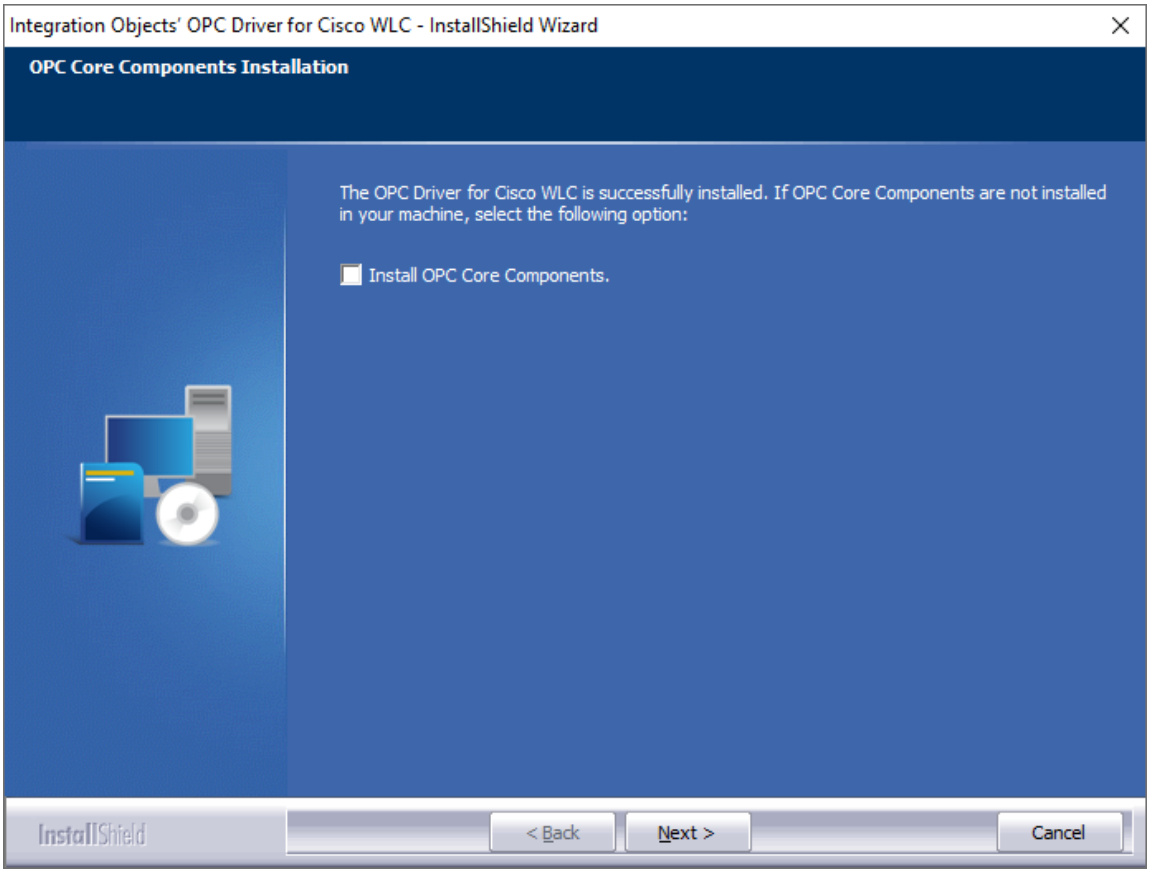

Figure 9: Install OPC Core Components Dialog Box

The Installation Complete dialog box will then be displayed, as illustrated in the figure below.

10. Click the **finish** button to complete the installation.

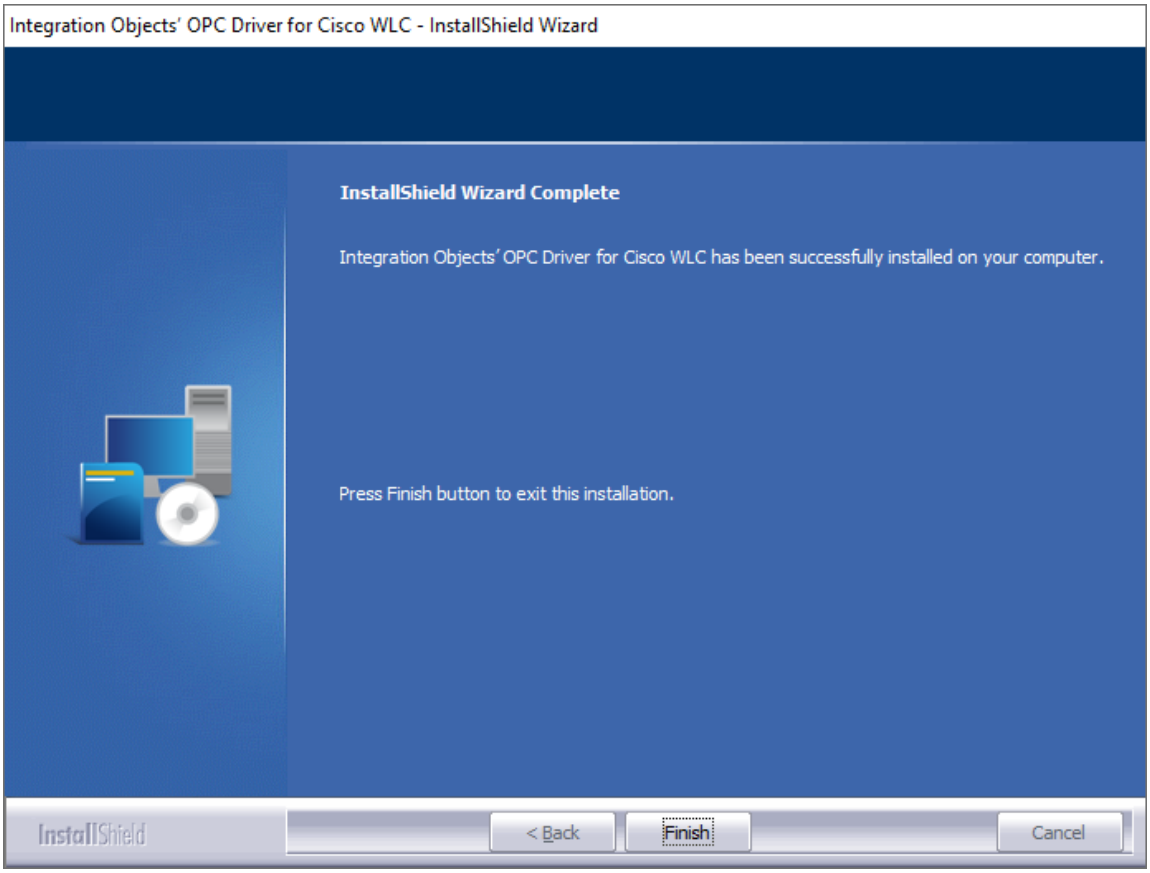

Figure 10: Installation Completed Dialog Box

3. Starting-up

Go to **Start => Programs => Integration Objects =>OPC Driver for Cisco WLC** to start the OPC Driver for Cisco WLC configuration tool.

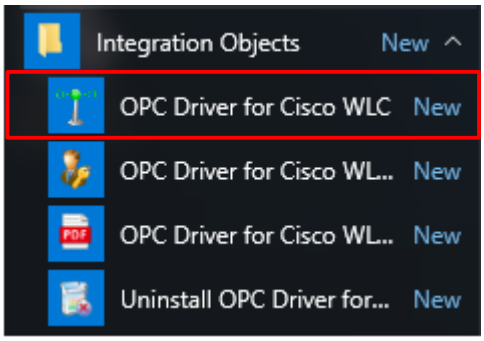

Figure 11: OPC Driver for Cisco WLC Start Menu

4. Removing the OPC Driver for Cisco WLC

Make sure that you are using an administrator account to execute the uninstallation procedure. To uninstall the OPC Driver for Cisco WLC, follow the steps below:

1. Click the **Uninstall** shortcut available in the start menu, as shown in the figure below:

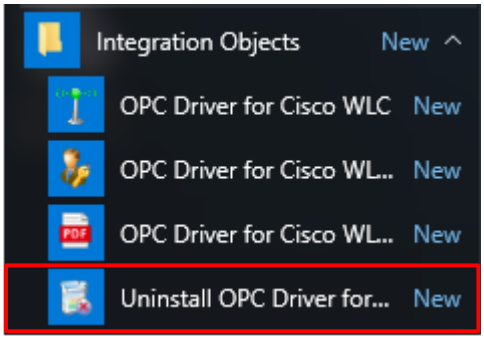

Figure 12: Uninstall Shortcut in the Start Menu

The following dialog box will appear:

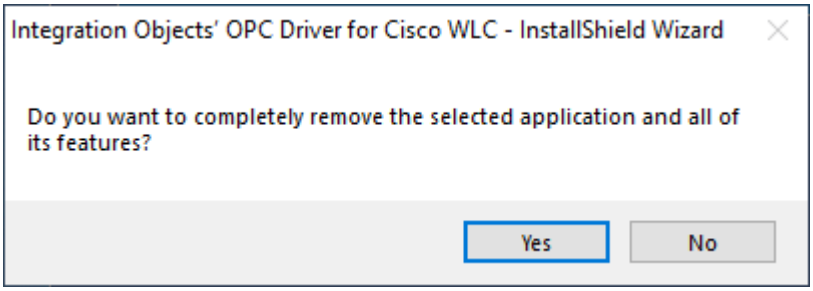

Figure 13: Uninstall the OPC Driver for Cisco WLC

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.

The OPC Diver for Cisco WLC can be also 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 Driver for Cisco WLC**.
4. Click **Uninstall** then **OK**.

USING OPC DRIVER FOR CISCO WLC

In this section, you will find an overview of the OPC Driver for Cisco WLC user interface as well as the steps required to configure and use the application.

1. User Interface Overview

The OPC Driver for Cisco WLC configuration tool is a user-friendly graphical interface designed to configure and add a WLC, an OPC Server and the publisher service.

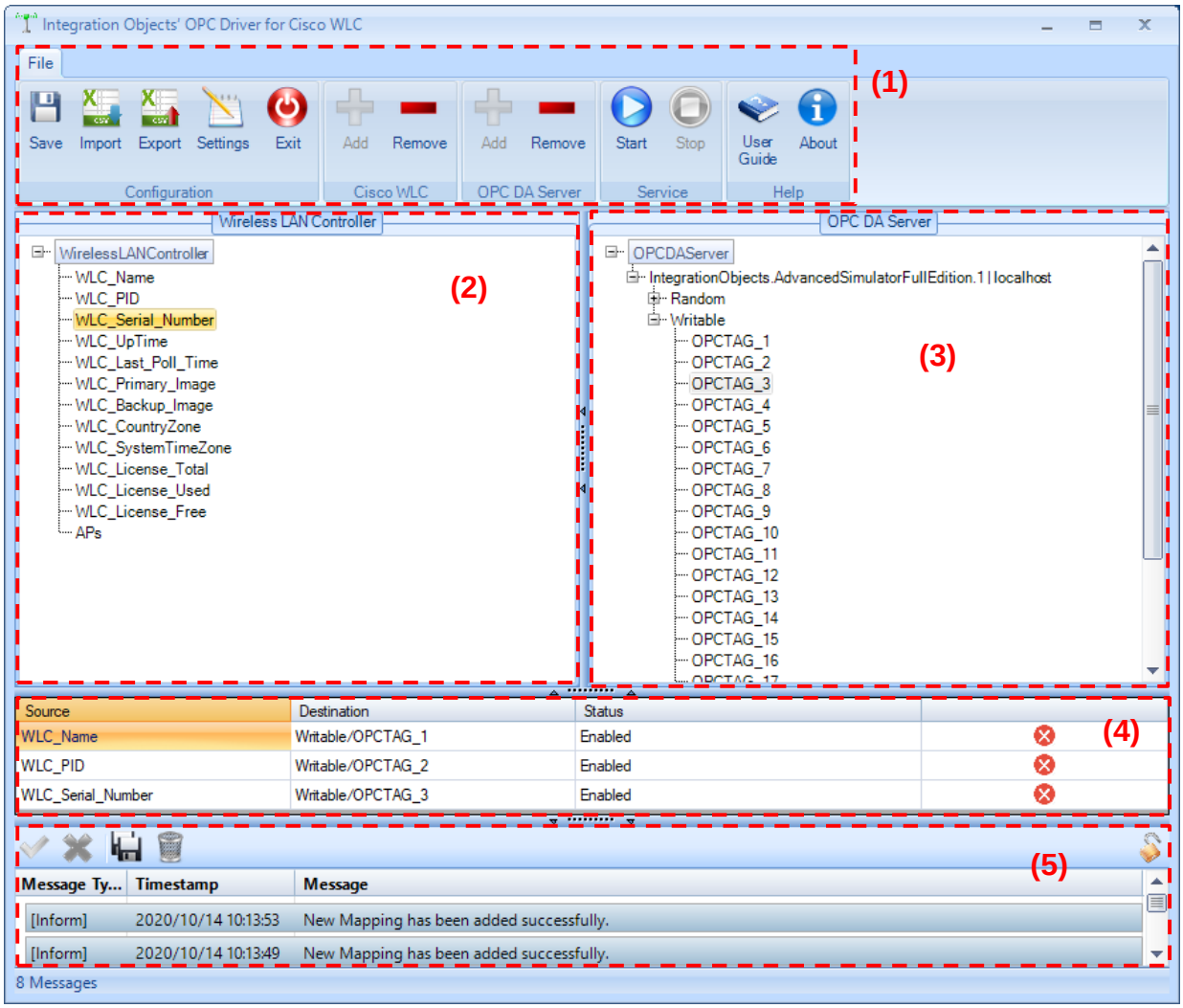

Figure 14: Configuration Tool Main View

There are 5 parts in the configuration tool user interface, as highlighted above:

- **File Menu (1):** It contains the configuration and the application menus for functionalities such as:
    - Saving the configuration file, importing a mapping CSV file, settings and exit.
    - Adding/removing a WLC, adding/ removing an OPC DA Server, starting/stopping the publisher service and providing help.
- **Sources Tree View (2):** It displays the configured WLC connection's tags, the access points and their tags.
- **Destinations Tree View (3):** It displays the connected OPC DA Server's address space.
- **Mappings Grid (4):** The grid contains the configured mappings between WLC and OPC DA tags. It also allows you to remove configured mappings.
- **Messages Browser (5):** Messages are listed from the most recent one to the least recent one and are highlighted according to the message type:
    - Blue for information messages
    - Yellow for warning messages
    - And red for error messages

2. File Menu

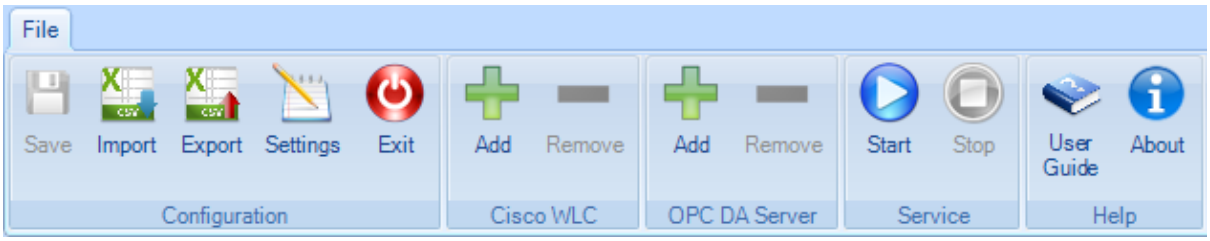

Figure 15: File Menu Bar

2.1 Configuration

Using the Configuration section in the File menu, you can:

- **Save:** Save the configuration file. When launching the driver, this saved configuration will be displayed as default.
- **Import:** Import a CSV file for mapping configuration.
- **Export:** Export the mapping configuration CSV file.
- **Exit:** Exit the configuration tool.
- **Settings:** Configure the settings of the OPC Driver for Cisco WLC. This will prompt the window below:

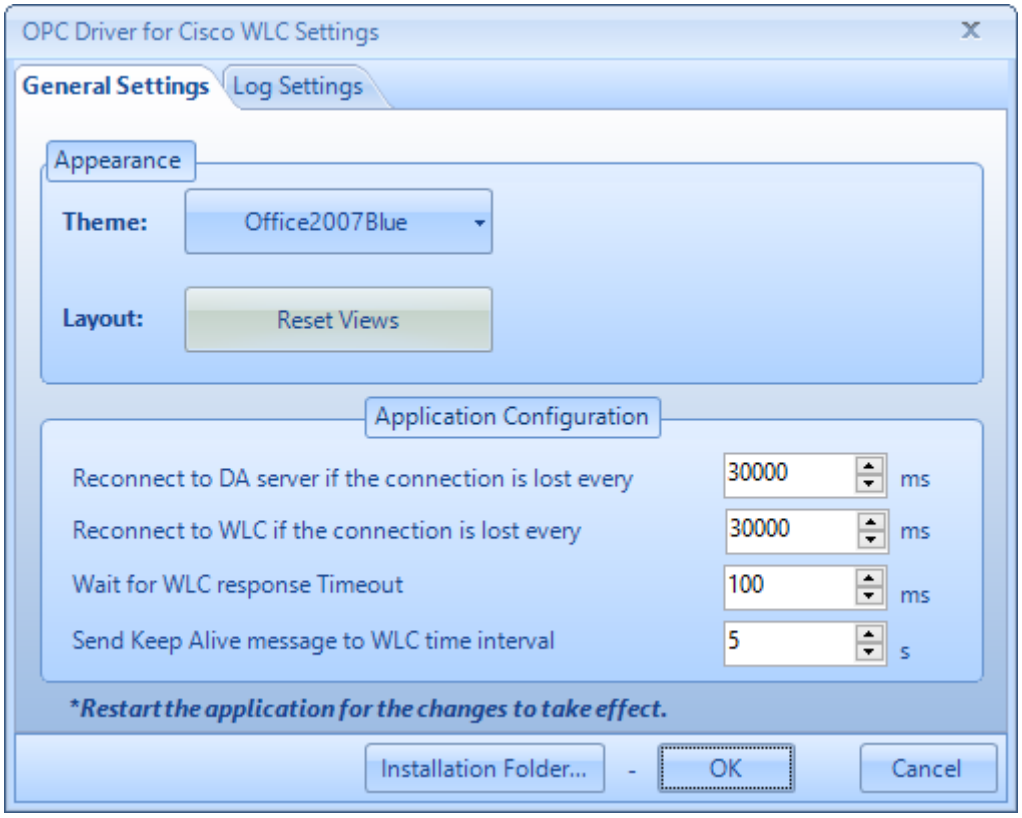

Figure 16: OPC Driver for Cisco WLC Settings – General

In the general settings tab, you can:

- Change the user interface theme.
- Configure the reconnection period to the OPC DA Server when the connection is lost.
- Configure the reconnection period to the Cisco WLC when the connection is lost.
- Configure the Timeout value for waiting a WLC response.
- Configure the time interval for sending a Keep Alive message to the WLC.

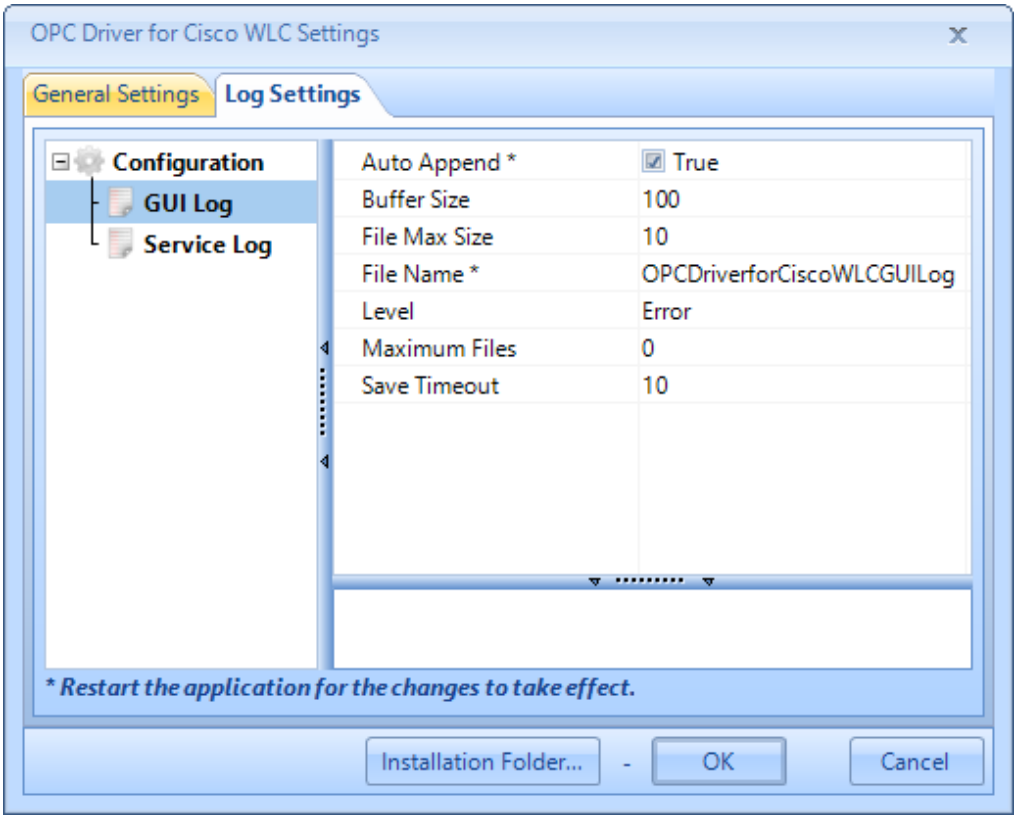

Figure 17: OPC Driver for Cisco WLC Settings – Log

In the log settings tab, you can configure the log parameters as illustrated in the figure above. For more details about these parameters, refer to the « OPC Driver for Cisco WLC TRACING CAPABILITIES » section of this user guide.

2.2 Cisco WLC

Using the Cisco WLC section of the File menu, you can:

- **Add:** Add and configure the WLC.
- **Remove:** remove the WLC.

2.3 OPC DA Server

Using the OPC DA Server section of the File menu, you can:

- **Add:** Add the OPC DA Server.
- **Remove:** Remove the OPC DA Server.

2.4 Service

Using the Service section of the File menu, you can:

- **Start:** Start the publisher service. The configuration must be saved first in order to start the service.
- **Stop:** Stop the publisher service.

2.5 Help

Using the Help section of the File menu, you can:

- **User Guide:** Open the user guide.
- **About:** Show the product about information.

3. Cisco WLC Connection Management

In this section, we will detail the procedures for creating, editing, reconnecting and removing the Cisco WLC connection.

3.1 Connect to WLC

In the main interface, click on the **Add** button in the Cisco WLC section and the following dialog screen will appear:

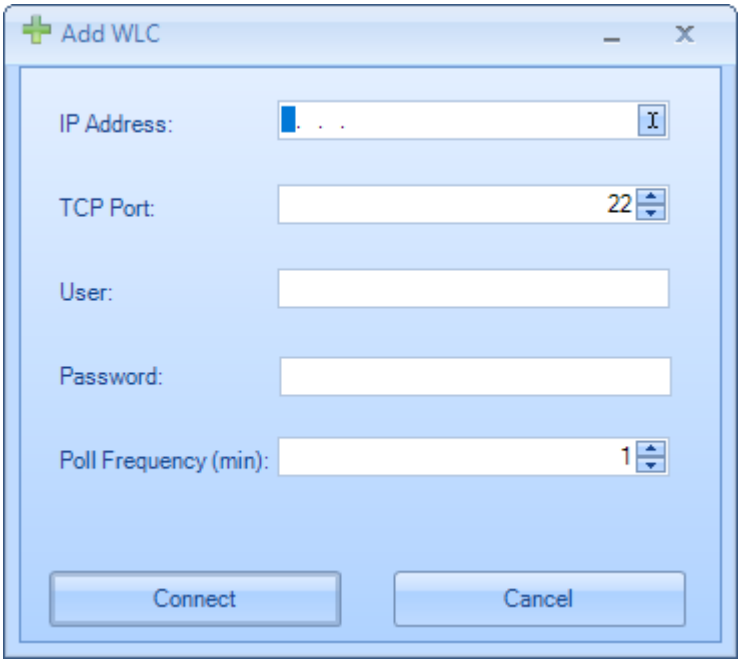

Figure 18: Cisco WLC Connection Dialog

Enter the information below to configure your connection to the Cisco WLC:

Parameter	Description
IP Address	The IP address of the Cisco WLC.
TCP Port	The TCP port used to connect to the WLC via SSH.
User	The user name of the user account to be used to connect to the WLC.
Password	The password of the user account to be used to connect to the WLC.
Poll Frequency	The frequency of polling the WLC tags values in minutes

Table 1: WLC Connection Parameters

After configuring the WLC connection, click the Connect button to initiate the connection to the WLC.

3.2 Browse WLC

In this tree view, you can find your configured WLC connection, its tags, the available access points and their tags.

3.3 Remove WLC

You can remove a Cisco WLC connection by either:

- Clicking on the **Remove** button in the Cisco WLC section of the File menu
- Or right-clicking on the WLC node in the Wireless LAN Controller tree view and choosing the **Remove** option

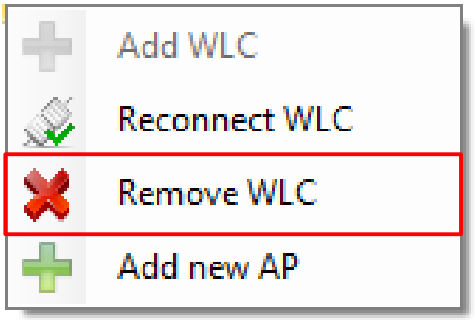

Figure 19: Remove WLC

3.4 Reconnect to WLC

You can manually reconnect to the WLC by right-clicking on the WLC in the Wireless LAN Controller tree view then choosing the **Reconnect** option from the displayed menu.

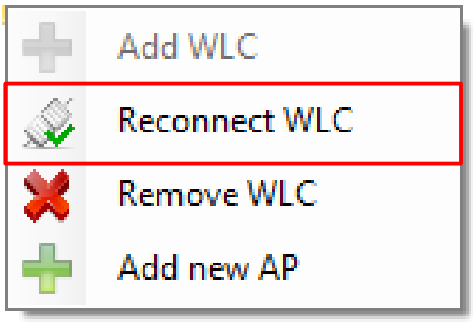

Figure 20: Reconnect to WLC

The following dialog will then be prompted:

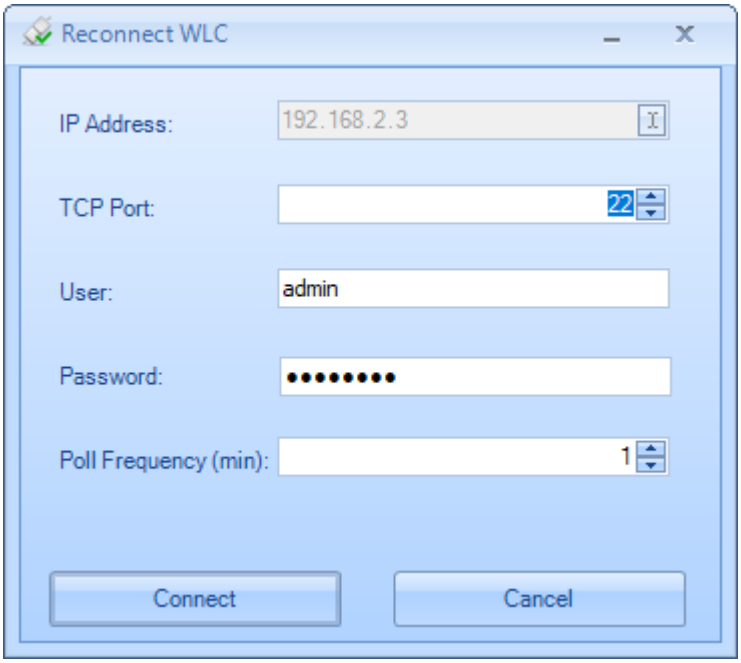

Figure 21: Reconnect to WLC Dialog

You can change the TCP port, user name, password and poll frequency. The reconnection will then be established with the new configuration.

4. Access Point Management

4.1 Add New Access Point

You can add a new access point by right-clicking on the WLC node in the Wireless LAN Controller tree view and then choosing the **Add new AP** option from the displayed menu.

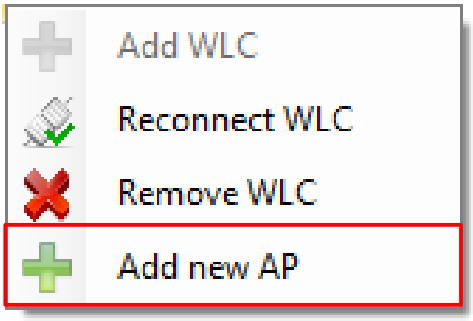

Figure 22: Add new Access Point

The following dialog will then be prompted:

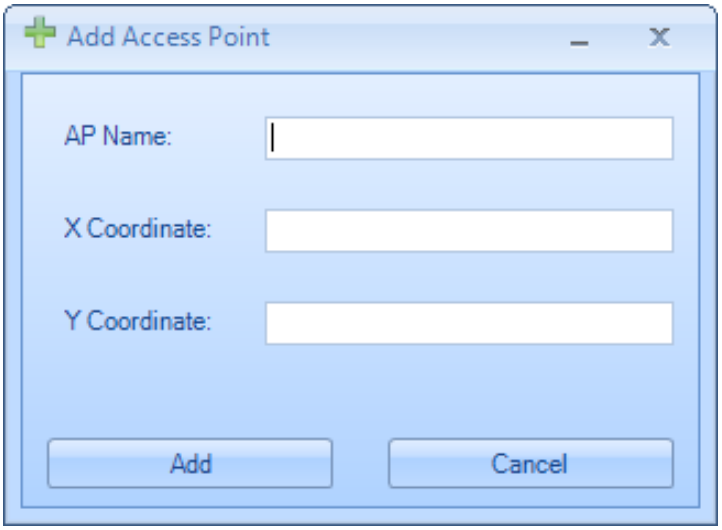

Figure 23: Add New Access Point

4.2 Edit Access Point

You can modify an access point by right-clicking on its AP's node and select the Edit AP option from the displayed menu.

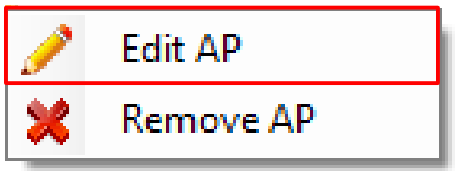

Figure 24: Edit an Access Point

The following dialog will then be prompted:

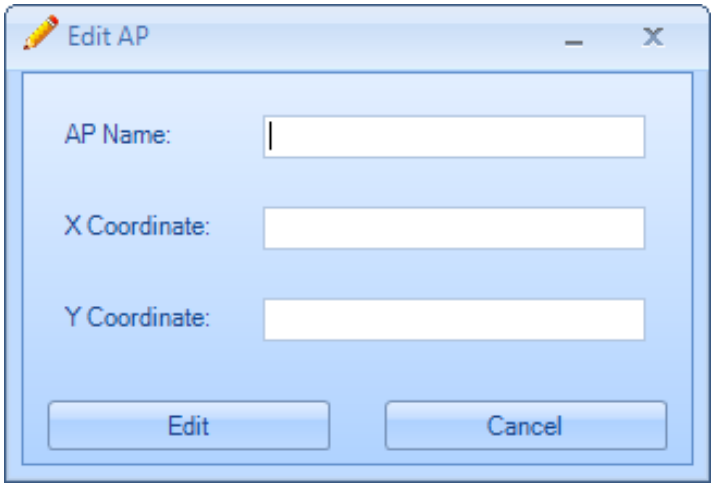

Figure 25: Edit an Access Point

4.3 Remove Access Point

You can remove an added access point by right-clicking on the specific AP's node and select the Remove AP option from the displayed menu.

5. OPC DA Server Connection Management

5.1 Add the OPC DA Server connection

In the main interface, click on the Add button in the OPC DA Server section of the File menu in order to connect to local or remote OPC DA Server. This will prompt the connection dialog illustrated in the figure below:

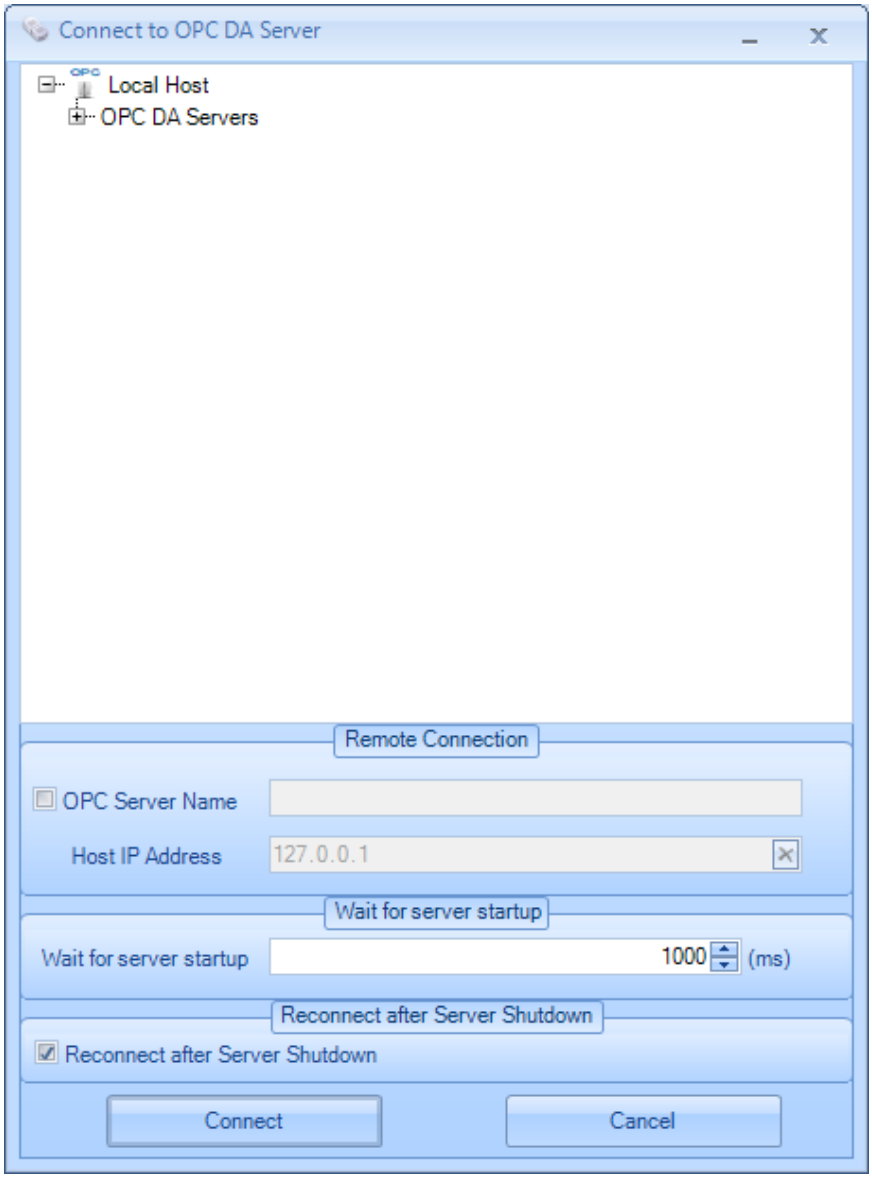

Figure 26: the OPC DA Server Connection Dialog

You can either browse the list of the OPC DA servers available in your local machine or connect to a remote server by manually entering:

- The Server name (ProgID) of your OPC DA server.
- The IP Address/Host name of the machine that hosts this OPC Server.

You can also refresh the list of available OPC servers by clicking on the **Refresh** action available in the right click menu on the Local Host node.

The **Wait for server startup** defines the time for which the OPC Driver for Cisco WLC will wait for the OPC Server to report that it is in RUNNING state before declaring a connection error.

By default, this field is set to 1 second (1000 milliseconds).

The **Reconnect after Server Shutdown** defines whether the OPC Driver for Cisco WLC should reconnect to the Server after the shutdown request or not.

5.2 Remove Server

You can remove the configured OPC DA Server by either:

- Clicking on the **Remove** button in the OPC DA section of the File menu.
- Right-clicking on the OPC DA Server node in the OPC DA Server tree view then choosing the **Remove Server** option from the displayed menu.

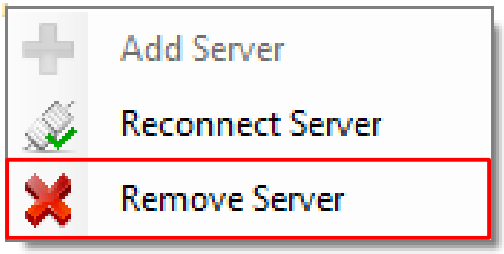

Figure 27: Remove OPC DA Server

5.3 Reconnect to OPC DA Server

You can manually reconnect to the configured OPC DA Server by right-clicking on the OPC DA Server node in the OPC DA Server tree view then choosing the **Reconnect Server** option from the displayed menu.

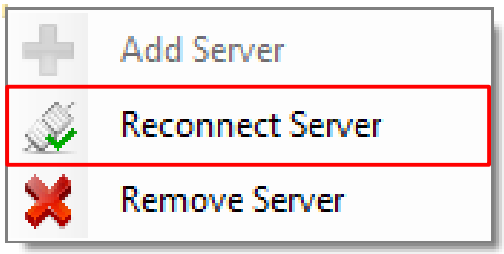

Figure 28: Reconnect to OPC DA Server

6. Mappings Management

To configure a mapping, drag a WLC tag and drop it on an OPC tag as shown in the following figure:

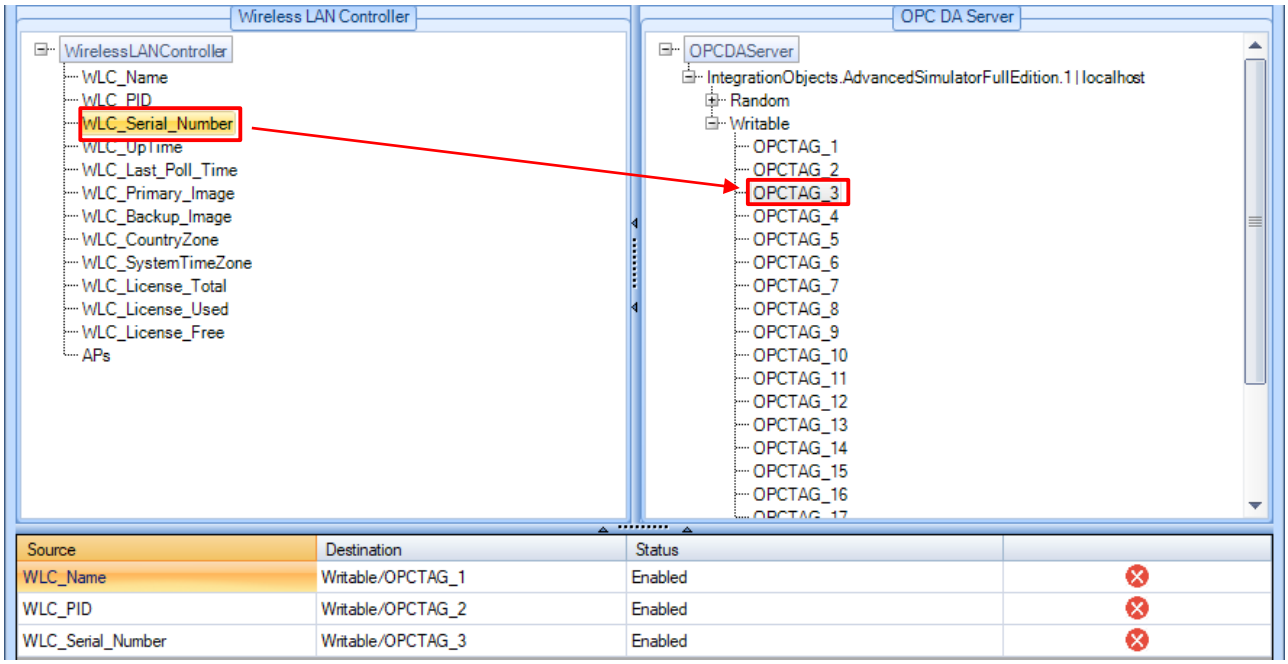

Figure 29: Add a new Mapping

The mapping will be then added to the Mapping grid view.
A mapping can be deleted by simply clicking the (**x**) icon button available in each mapping row.

7. Service Management

7.1 Start Service

After configuring the mappings and saving your configuration, the service can be started by clicking on the **Start** button available in the Service section of the File menu.

7.2 Stop Service

If the service is running, you can stop it by simply clicking on the **Stop** button available in the Service section of the File menu.

OPC Driver for Cisco WLC TRACING CAPABILITIES

The OPC Driver for Cisco WLC provides event tracing capabilities and produces 2 types of log files named as follows:

- The `OPCDriverforCiscoWLCGUILog.log` that records errors and debugging information generated by the user Interface.
- The `OPCDriverforCiscoWLCServiceLog.log` that records errors and information generated by the Integration Objects' OPC Driver for Cisco WLC publisher service.

If difficulties occur with the OPC Driver for Cisco WLC, the log files can be extremely valuable for troubleshooting. Under normal operation, the log files contain very little information. These log files are generated at start-up under the installation folder.

The OPC Driver for Cisco WLC incorporates 2 configuration files: `WLCOPCDriverGUIConfig.ini` and `WLCOPCDriverConfig.ini`. These files include several logging parameters. All these parameters have default settings and can be changed by editing the configuration files. The logging parameters are detailed in the following table.

Setting	Description	Default Value
AutoAppend	Set to true to continue writing log messages in the existed log file or to false to create a new file.	True
BufferSize	The maximum number of messages to be stored in the runtime memory before launching a write action in the hard disk. The specified value must be greater than 100.	100 messages
LogFileMaxSize	This is the maximum log file size, in Mega-Bit. Once it is reached the OPC Driver for Cisco WLC will automatically create a new log file and archive the last one.	10MB
FileName	The OPC Driver for Cisco WLC log file name.	OPCDriverforCisco WLCGUILog
MaximumFiles	Set to 0 means that log files will be created in an unlimited way.	0

Level	There are five log levels: 1. **Control:** Logs only control messages. 2. Error: Logs error and control messages. 3. **Warning:** Logs warning, error and control. 4. **Inform:** Logs information, warning, error and control messages. 5. **Debug:** Logs all messages generated by the OPC Driver for Cisco WLC. The higher the log level, the more information are recorded. We recommend using level “Error” for a better performance of the service. The other levels are dedicated for troubleshooting purposes only.	Error
AutoSaveTimeOut	The time to wait to read all messages from the buffer and write them to the hard disk. The minimum value is 10s.	10 seconds

Table 2: Log Settings

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