OPC Data Logger by Software Toolbox

USER MANUAL

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Welcome

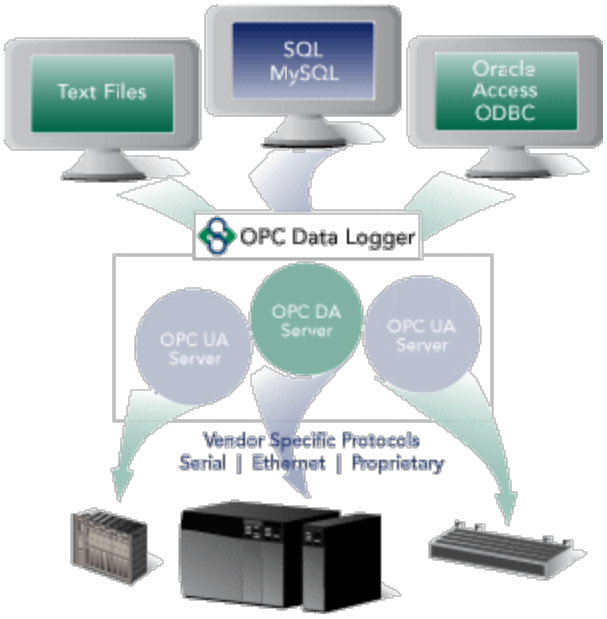
1 Welcome

Thank you for choosing The Software Toolbox Data Logger, the complete data-logging solution for logging process-data to your choice of data-storage medium.

The Purpose of the OPC Data Logger is to collect industrial-process data from a variety of data-sources, such as OPC Servers, and place this data in Data Storage locations such as Text Files and/or Databases.

The application uses a plug-in based architecture allowing you to customize which components to install and use. Both the Data Collection and Data Storage locations available will depend on the features installed and which licenses are purchased.

The application supports OPC DA 2.x and OPC UA specifications. This means it can connect to any OPC 2.x or OPC UA compliant server. The application was developed in C#, based on the Microsoft .NET Framework version 3.0, and is intended for use on Microsoft Windows Operating Systems.



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Features

- Plug-in based architecture
- Log data from a variety of data sources, such as OPC DA 2.x compliant Servers and OPC UA compliant servers
- Log data to a number of destinations such as Text Files and numerous Database providers.
- Log data continuously or based on triggers.
- Automatically re-establish lost connections between data sources and data storage locations.
- Advanced interoperability tools, troubleshooting and event logging built-in.
- Configure and test your configurations without affecting any data logging currently in progress.

Supported Platforms

- Windows 7
- Windows 8
- Windows 10
- Windows 11
- Windows Server 2012 & 2012 R2
- Windows Server 2016
- Windows Server 2019
- Windows Server 2022
- x64 machines

Supported Databases

- Text Files
- Microsoft Access 2000 and later

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- SQL Server
- MySQL
- ODBC compliant databases

Recommended Reading

We recommend the following sections to help you get started:

- Introduction
- How to Use the Data Logger
- Configuration Wizards
- Detailed Reference
- Troubleshooting
- Support Contact

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Introduction

2 Introduction

Basic Concept

1. Data comes from a Data Collector.
2. The data is then formatted as in Detail Mode or Table Mode.
3. The data is then logged to a Data Store.

Intermediate Concept

The definition of the Data Collector, Data Presentation and Data Storage are all specified within an OPC Data Logger Logging Task.

The Logging Task defines the relationship between these 3 components. More than one Logging Task can exist within a configuration.

Configuring the Data Logger

The following sections describe the theory behind the OPC Data Logger:

1. What data will be logged?
2. How will data be logged?
3. When will data be logged?
4. Where will data be logged?
5. Project Design

2.1 What is the OPC Data Logger?

The Purpose of the OPC Data Logger is to collect OPC Tag data from OPC Servers and place this data in Data Storage locations. The Data Storage locations, or types of files, available depends on the which features are installed and which license is purchased. The OPC Data

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Logger is an OPC Data Access (DA) Client which supports DA 2.x and also an OPC Unified Architecture (UA) client which supports the DA profile for UA. This means it can connect to any OPC DA 2.x or OPC UA compliant OPC Server. The OPC Data Logger was developed in Microsoft .NET and for use on Microsoft Windows Operating Systems.

2.2 Launching the Application

The Client Configuration User Interface can be launched in one of two ways: through the notification icon or directly by launching the executable file - .exe.

Windows Service

The OPC Data Logger is installed as a Windows Service. This allows the application to run 'unattended' and in the background of Windows. This means that the application is automatically loaded and started when Windows boots up. This also means that the OPC Data Logger can collect information without having to have a specific user logged in.

While the Data Logger service is running you will notice a small notify icon by the clock in the system tray. To launch the user interface simply

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right-click on this icon and select the Configuration option. This allows you to access the Data Logger configuration and perform test runs. Launching the client configuration interface this way also provides you with the ability to start and stop Runtime.

Application

Launching the application directly by running "DataLogger.exe" will launch the client configuration user-interface. You can run the .exe from the start menu. The default location is Start | All Programs | Software Toolbox | OPC Data Logger | Data Logger Configuration. This allows you to configure a new Data Logger project and perform test runs, but will not allow you to start and stop Runtime.

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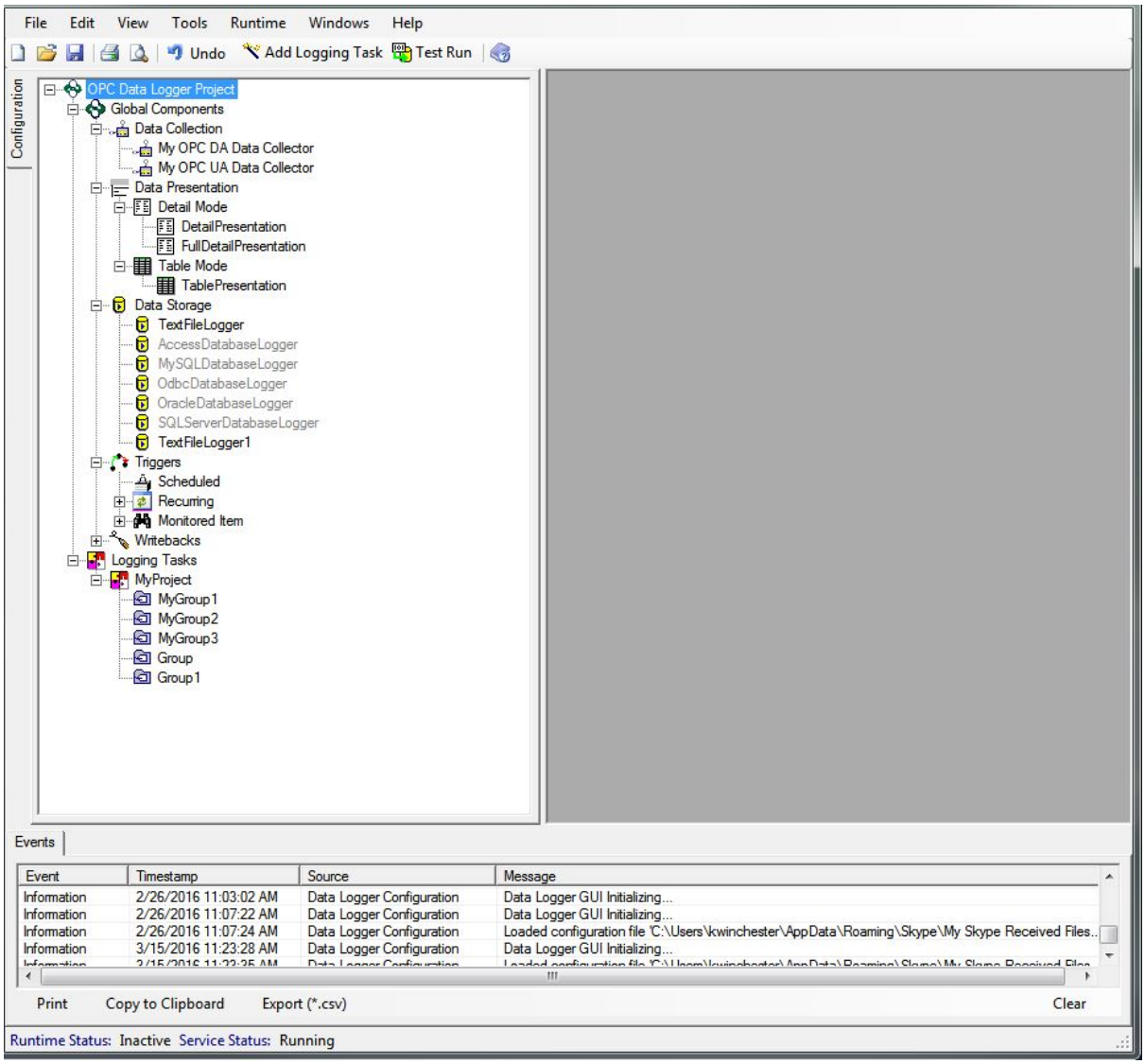
Client Configuration User Interface



The user interface is split into 3 distinct sections:

- Configuration (Left pane)
  This contains the "tree view" which shows you the various pieces of the Global Components, such as the Data Collectors, Data Presentations, Data Stores as well as the Logging Tasks.
- Workspace (Right Pane)
  This is where property windows will open for the different global components..

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- Event Log (Bottom Pane)
  This is the event notifications area where you will see general application information, warnings and errors.

2.3 What data will be logged?

Which items the OPC Data Logger will log is determined by which items are added to the logging groups, and whether those groups are active.

Groups

What items will be logged for each group and what polling mechanism is used – be it subscription based, timer based, or trigger based – is configured for each OPC Data Logger group. Detailed information on configuring groups can be found in the detailed Groups reference section.

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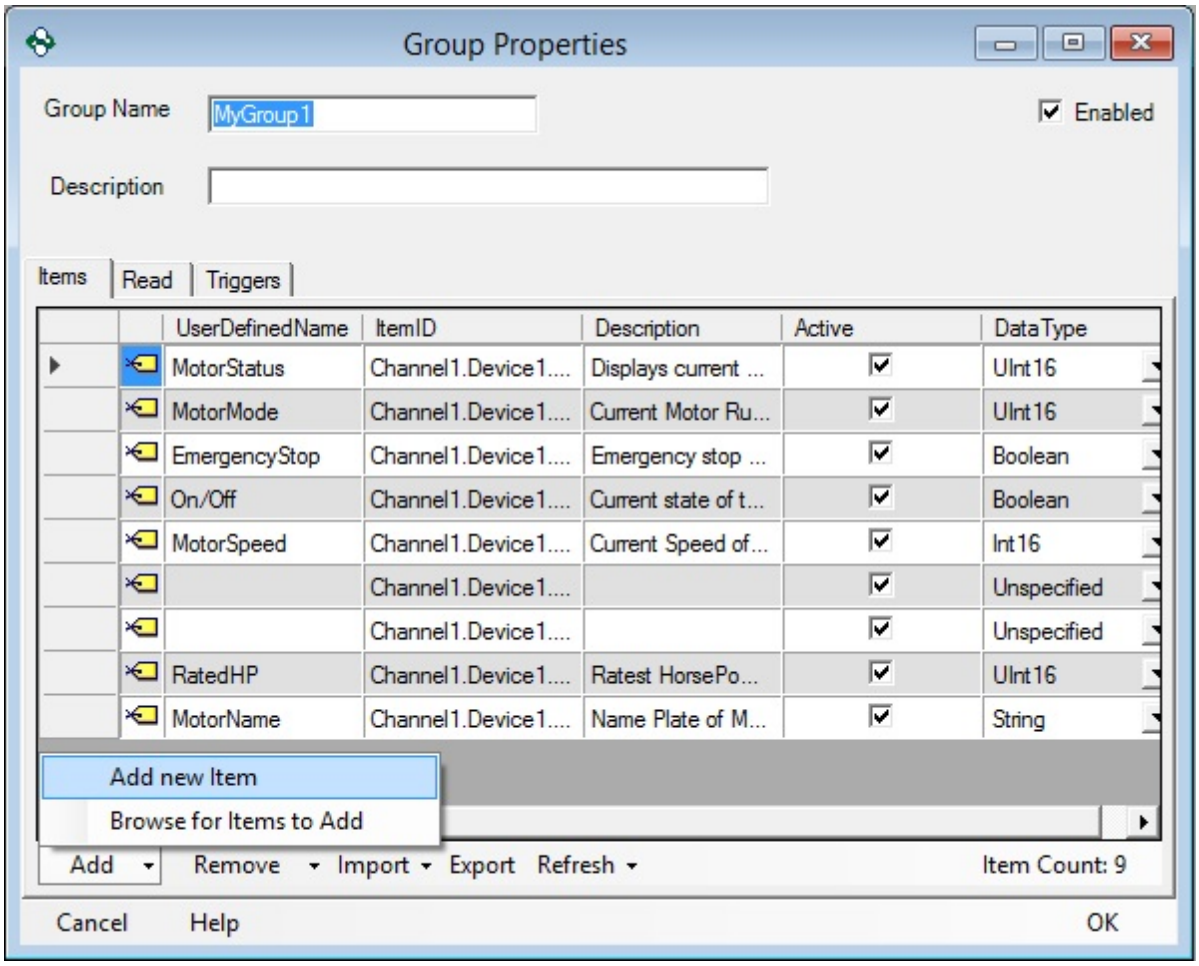

Entire groups can be set active or inactive through the Parent Logging Task properties. Inactive groups will not be polled, or logged.

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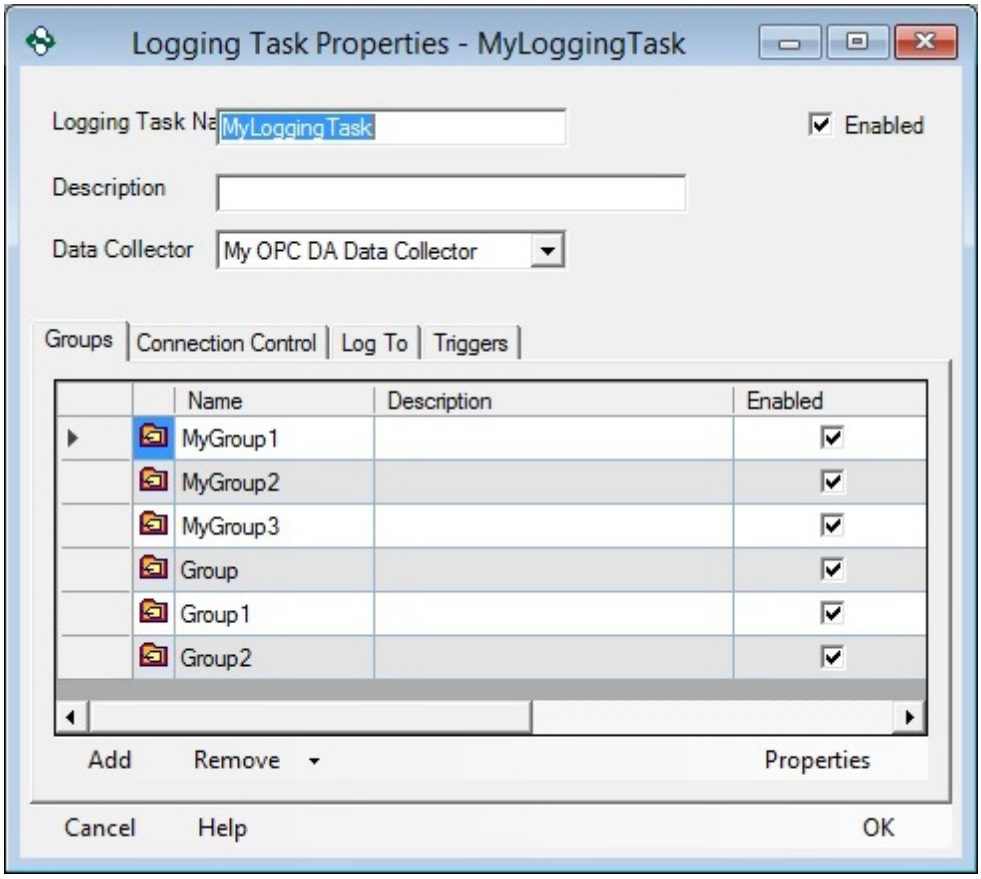

2.4 How will data be logged?

The OPC Data Logger can be configured to log data in one of two formats; Table mode, and Detail mode.

Table Mode

When a Data Storage is configured to use a Table Presentation mode, all data points will be logged under their own column. The first column will show the timestamp that the data is logged to the data storage, and each following column contains the value of each item in the group that is being logged.

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Table Mode Example: (shown as raw data)

Timestamp,Tag1,Tag2,Tag3,Tag4,Tag5,Tag6,Tag7,Tag8,Tag9,
2015/07/28 02:11:45.9282,0,10,-500,0,True,0,0.3,0,0
2015/07/28 02:11:46.1387,0.6,85,-500,0,True,0.6,4.8,0,2.1
2015/07/28 02:11:46.3898,1.2,165,246,0,False,1.2,9.6,0,4.5
2015/07/28 02:11:46.8898,2.1,255,246,0,False,2.1,15,0,7.2
2015/07/28 02:11:47.1428,2.7,335,361.1429,1,True,2.7,19.8,0,9.6
2015/07/28 02:11:47.3739,3.6,415,361.1429,1,True,3.6,24.6,0,12
2015/07/28 02:11:47.6239,4.2,505,-188.8333,1,False,4.2,30,0,14.7
2015/07/28 02:11:47.8739,4.8,585,-188.8333,1,False,4.8,34.8,0,17.1
2015/07/28 02:11:48.1239,5.7,665,171.2,1,False,5.7,39.6,0,19.5
2015/07/28 02:11:48.3740,6.3,755,171.2,1,False,6.3,45,0,22.2

Table Mode Example: (shown as chart)

Timestamp	Tag 1	Tag2	Tag3	Tag 4	Tag5	Tag 6	Tag 7	Tag 8	Tag9
2015/7/28/ 2:11:45.928	0	10	-500	0	TRUE	0	0.3	0	0
2015/7/28/ 2:11:46.139	0.6	85	-500	0	TRUE	0.6	4.8	0	2.1
2015/7/28/ 2:11:46.390	1.2	165	246	0	FALSE	1.2	9.6	0	4.5
2015/7/28/ 2:11:46.890	2.1	255	246	0	FALSE	2.1	15	0	7.2
2015/7/28/ 2:11:47.143	2.7	335	361.1429	1	TRUE	2.7	19.8	0	9.6
2015/7/28/ 2:11:47.374	3.6	415	361.1429	1	TRUE	3.6	24.6	0	12
2015/7/28/ 2:11:47.624	4.2	505	-188.8333	1	FALSE	4.2	30	0	14.7

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2015/7/28/ 2:11:47.874	4.8	585	-188.8333	1	FALSE	4.8	34.8	0	17.1
2015/7/28/ 2:11:48.124	5.7	665	171.2	1	FALSE	5.7	39.6	0	19.5
2015/7/28/ 2:11:48.374	6.3	755	171.2	1	FALSE	6.3	45	0	22.2

Table Mode allows selection of which groups should be logged in Logging Tasks with multiple groups. There is no limit to the number of groups that can be added to a Table Mode presentation format but a minimum of one group is required.

Please Note: In situation where only a single item in a group has changing values, a new entry will be created in the Data Storage every time a new value is detected. Tags whose values are not changing will show the same value getting logged multiple times.

For more information please refer to the Data Presentation section.

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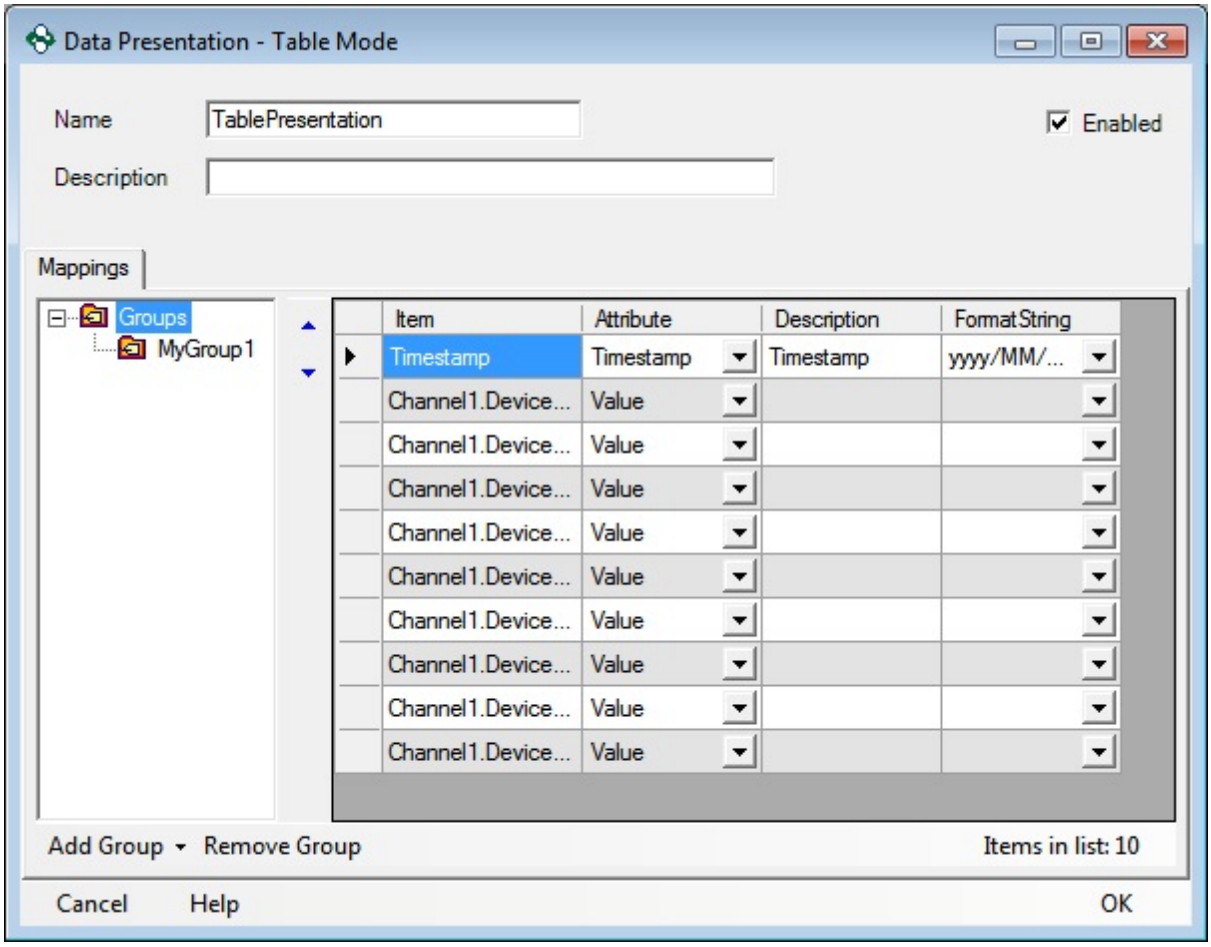

Detail Mode

When Detail Mode is selected, much greater control over how data is logged, and – more importantly what data is logged – becomes possible. The OPC Data Logger provides 20 attributes that can be logged for each item – The Detail Mode section provides further information on the attributes that are available to be logged. In Detail Mode, each row is dedicated to a single data item, and will contain all attributes that are selected to be logged.

Unlike Table Mode, Detail mode allows for logging of individual items with changing values – this means that when exception based logging is being used, only changing values will be logged.

Please Note: In Detail mode the OPC timestamp is logged, not the timestamp of logging.

For more information please refer to the Data Presentation section.

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The examples below logged the three default attributes; the OPC Timestamp, the ItemID, Value, and the item Quality

Detail Mode Example: (shown as raw data)

Timestamp(yyyy/MM/dd hh:mm:ss.ffff),ItemID,Value,Quality

2015/07/28 02:11:45.8787,Channel4.Device1.Tag9,0,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag8,0,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag7,0.3,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag6,0,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag5,True,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag4,0,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag3,-500,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag2,5,192

2015/07/28 02:11:45.8787,Channel4.Device1.Tag1,0,192

2015/07/28 02:11:45.8787,Channel7.Device1.Tag9,0,192

Detail Mode Example: (shown as chart)

Timestamp	ItemID	Value	Quality
2015/7/28 2:11:45.879	Channel4.Device1.Tag9	0	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag8	0	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag7	0.3	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag6	0	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag5	TRUE	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag4	0	192

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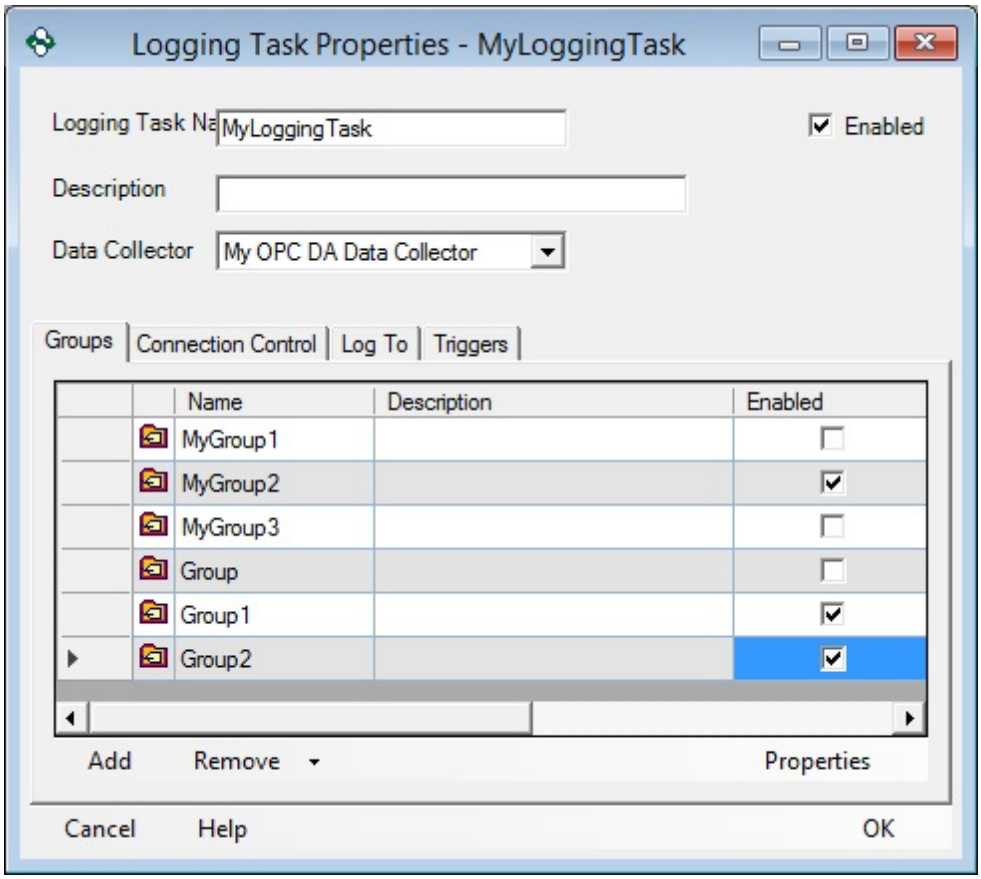
2015/7/28 2:11:45.879	Channel4.Device1.Tag3	-500	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag2	5	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag1	0	192
2015/7/28 2:11:45.879	Channel7.Device1.Tag9	0	192

In Detail Mode all enabled groups within the Logging Task will be logged. Any groups that should not be logged should be disabled in the Logging Task properties.



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2.5 When will data be logged?

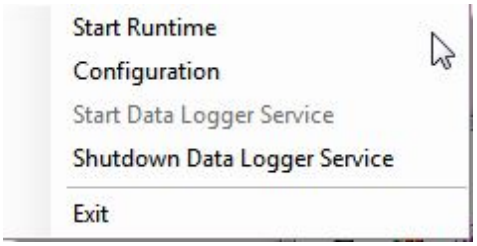
The Runtime status controls whether or not data is being actively logged. The Runtime can be started and stopped manually or automatically. If the Runtime is stopped data will not be logged.

Starting and Stopping Runtime Manually

The Runtime can be started manually two ways:

1. Using the Start Runtime command within the GUI.

2. Right clicking the icon in the system tray and selecting Start Runtime.



The Runtime can be stopped manually two ways:

1. Using the Stop Runtime command within the GUI.
2. Right clicking the icon in the system tray and selecting Stop Runtime.

Starting the Runtime Automatically when Windows Starts

There are two settings that must be used for the OPC Data Logger Runtime to start when Windows starts. Both settings have to be used in conjunction with each other.

1. The OPC Data Logger Service must be set to Automatic. This is an option at the end of the installer. Alternatively, this can be set by opening the properties of the DataLoggerService (Start | Control Panel | Administrative Tools | Services) and set the StartUp type of the service to Automatic.

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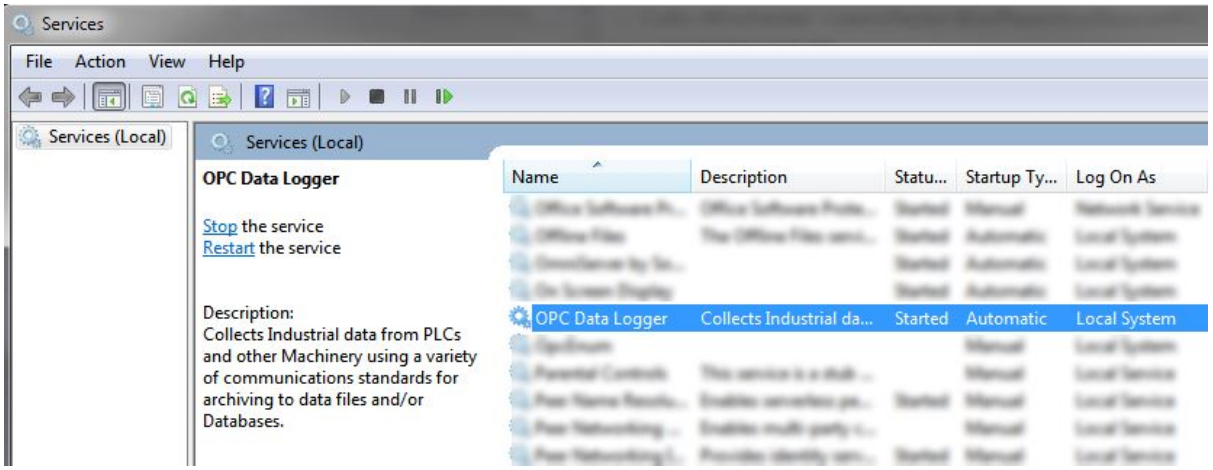
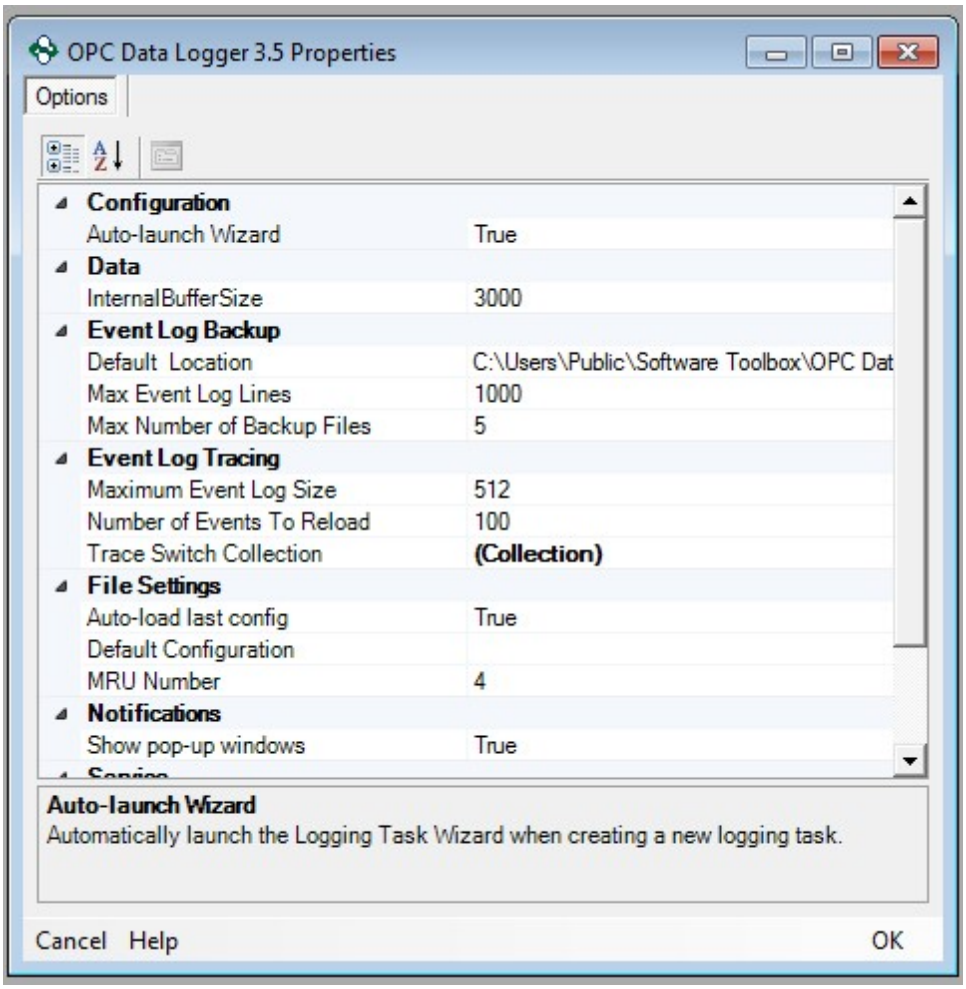


1. Open the Options from Tools | Options in the Data Logger User Interface. Find the setting Service auto-starts Runtime and set it to True. This setting is enabled by default.



To test the new configuration settings reboot the computer and make sure that when Windows starts the Runtime is also started.

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Starting and Stopping Logging Automatically

Once the Runtime is started the data logging can be Started or Stopped automatically by using triggers. If the Runtime is stopped any configured triggers will be ignored. There are three different types of triggers:

- Scheduled trigger
- Recurring trigger
- Monitored item trigger

For more information about these triggers and how they can be used please refer to the Triggers section.

To use a trigger that starts or stops logging it must be added under the Triggers tab, within the logging task properties, and assigned an effect to it. For more information about adding triggers to your Logging Tasks please refer to the Logging Tasks section.

2.6 Where will data be logged?

The configured Data Storage will determine what type of storage medium the data will be logged in. The OPC Data Logger Data Storage Wizard gives a detailed guide on how a Data Storage is configured.

Choosing Where to Log Data

The first part of configuring a Data Storage involves selecting the desired storage medium from the list of available storage types, and naming the Data Storage

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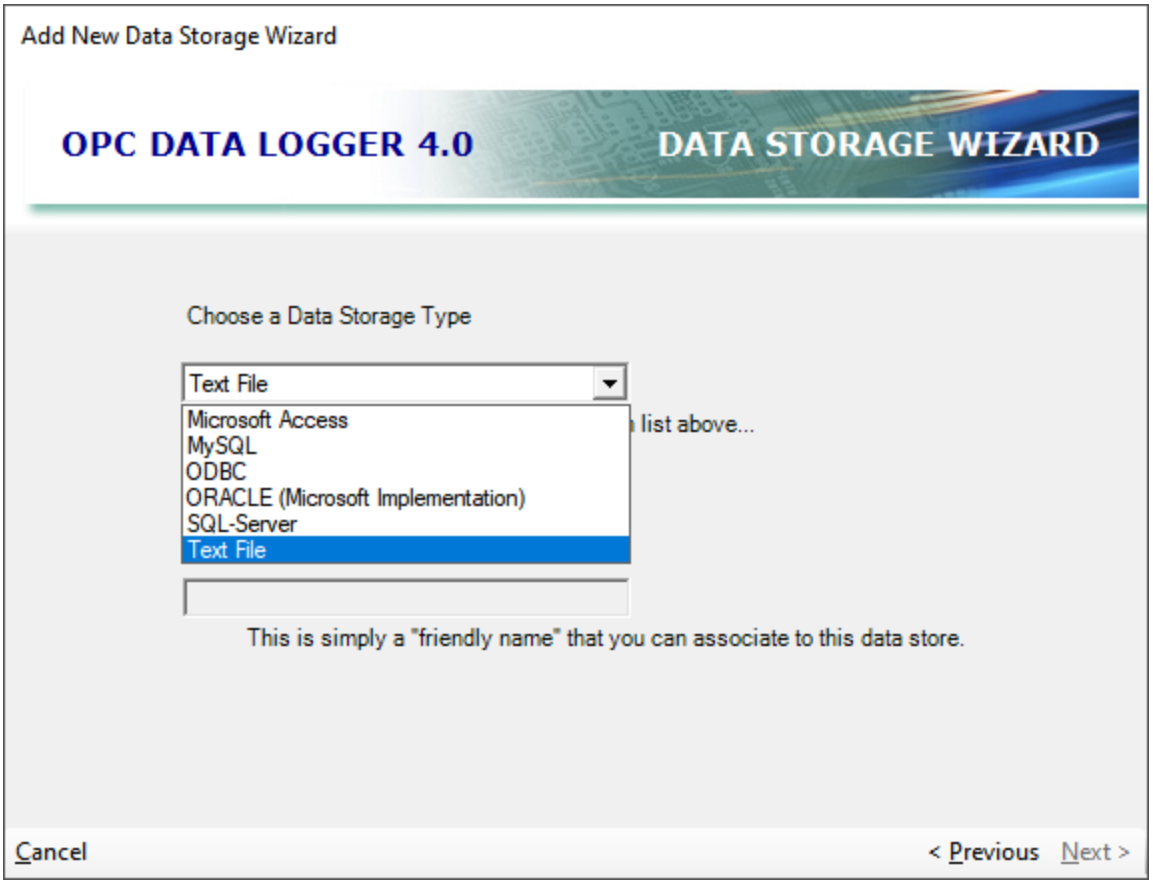

The OPC Data Logger supports logging to:

- Text files
- SQL Server databases
- Microsoft Access databases
- ODBC databases.
- MySQL databases

The Data Storage section provides more detailed information, specific to each storage type.

Enabling Data Storage Components

In order for data to be logged to a new Data Storage, a Logging Task must be configured to log to the Data Storage. Data Storage assignments can be configured under the *Log To* tab of the Logging

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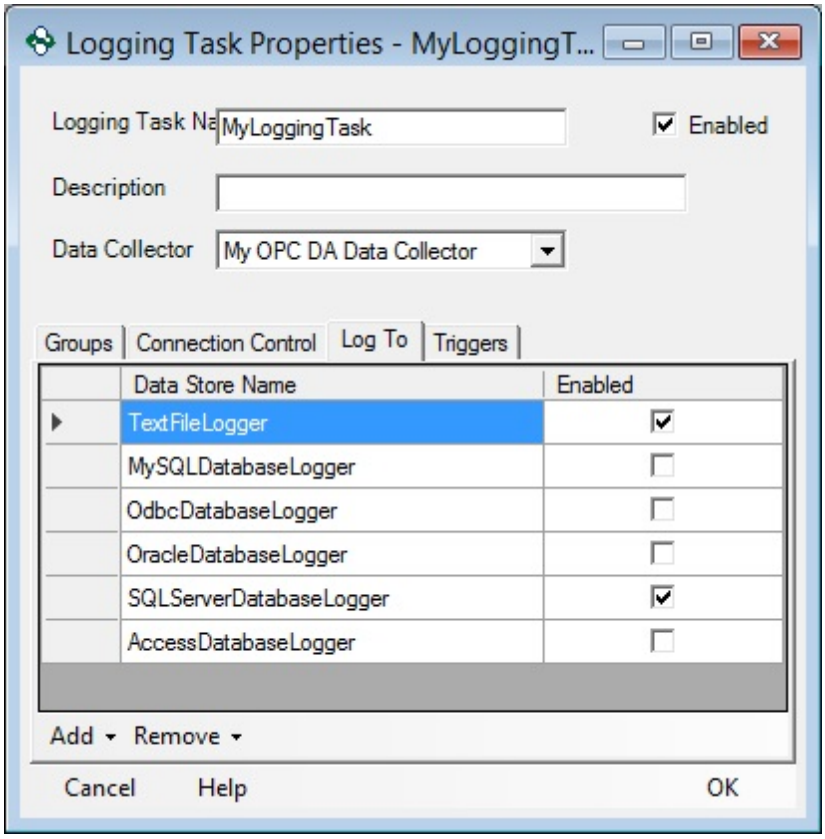
Task Properties, by using the Add and Remove buttons to associate Data Storages with specific Tasks. The Enabled check box allows for easy enabling, or disabling, of logging to individual Data Storages.



The OPC Data Logger allows logging to multiple Data Storages simultaneously.

Please note: The OPC Data Logger is licensed by storage medium – logging to multiple storage types may require multiple licenses.

2.7 Project Design

The OPC Data Logger allows for a wide range of configuration options, but regardless of how data is logged, where data is logged, when data is logged, or even which data is logged – the basic flow of information through the OPC Data Logger is the same.

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A number of key components are required for every Data Logger configuration:

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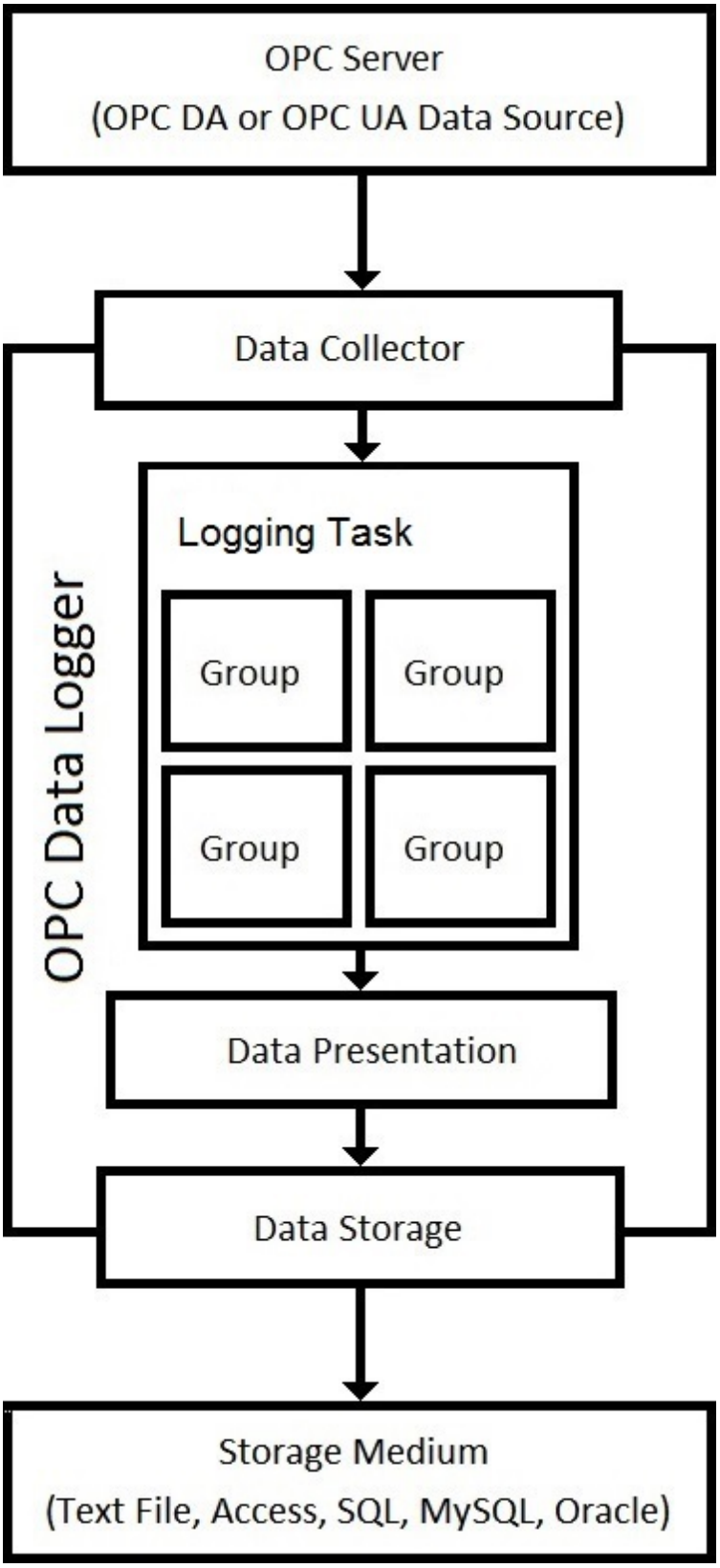

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Data Collector – The Data Collector is the interface between the OPC Data Logger and the source of the data. Any OPC DA or OPC UA Server can be used as a source of data, and while any Project can only have a single Data Collector, an OPC Data Logger configuration can have an unlimited number of Data Collectors.

Logging Task – The Logging Task acts as the container where all data collection is configured; it links a Data Collector to any number of Data Storages. The logging task also contains the logging groups, and has to hold at least 1 group.

Group – The Group specifies what data will be logged, the reporting method, and with what frequency the data will be read from the data source.

Data Presentation – The Data Presentation configures the format in which data will be logged. The Detailed Reference section provides further information on the features and differences between logging in Detail Mode, or Table Mode.

Data Storage – In the same fashion that the Data Collector acts as the interface between the OPC Data Logger and the OPC Server, the Data Storage components acts as the interface between the OPC Data Logger and the Storage. While a logging task can only be associated with a single Data Collector, there is no such limitation with Data Storages – the data can be logged to a several databases simultaneously, even if the storage medium is different.

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Configuration

3 Configuration

3.1 Getting Started

The OPC Data Logger configuration is made very easy thanks to easy-to-use wizards.

Please refer to the Example Configurations section for step-by-step instructions to configure the Data Logger to accomplish the most frequently used data logging scenarios.

3.2 Wizards

Wizards greatly simplify the configuration of the OPC Data Logger application. While, wizards make it easy to walk through the configuration, this section will discuss what each of the steps in each wizard window actually means and what effect these options will have on the OPC Data Logger configuration.

The following wizards currently exist:

- Data Collector
- Data Storage
- Data Presentation
- Logging Tasks

3.2.1 Data Collector

There are two different Data Collectors that can be configured as a data collector.

Depending on which type of OPC Server is being used, the wizard that should be selected will vary:

- OPC DA
- OPC UA

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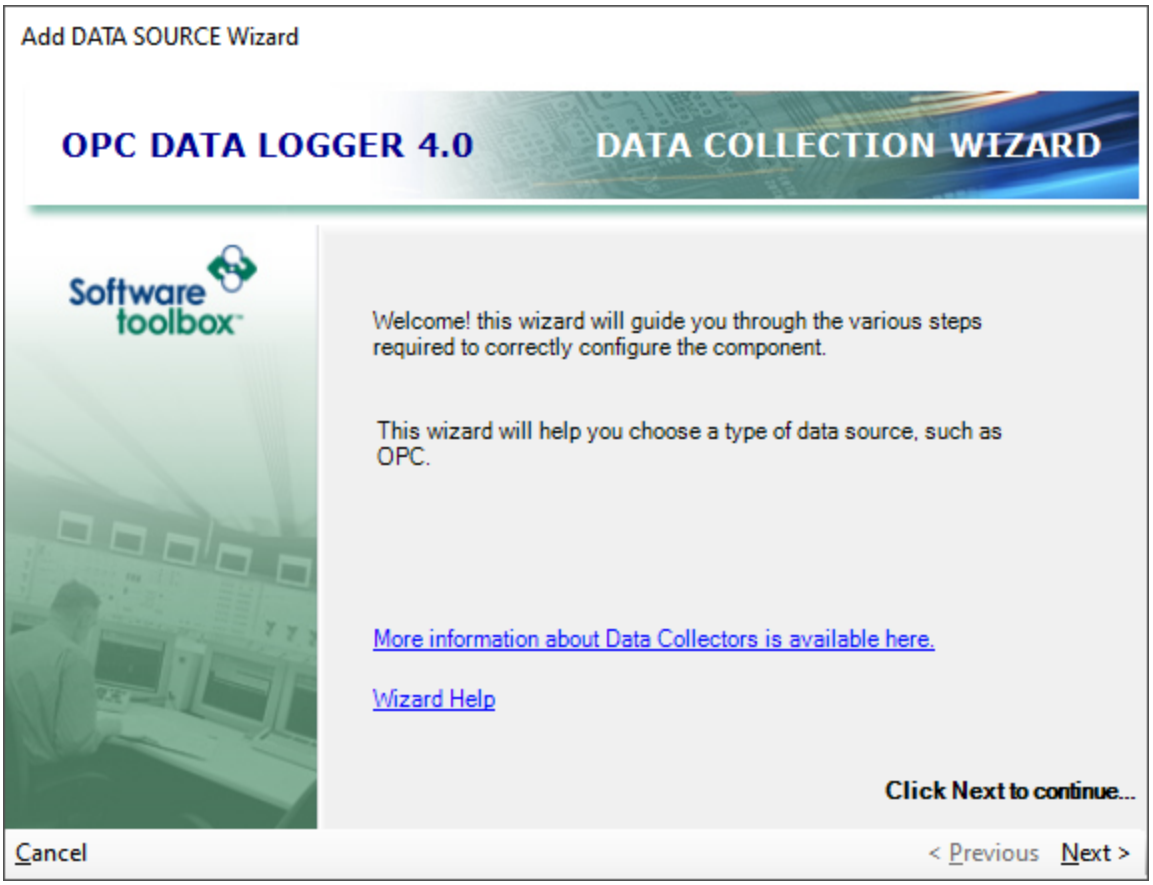
3.2.1.1 OPC DA Data Collector Wizard

The Data Collector specifies the source of the data that will be logged, and establishes the connection to the OPC Server. The Data Collector Wizard aids in the configuration of OPC Data Access (DA) or OPC Unified Architecture (UA) servers. This section details how to create an OPC DA Data Collector; for help with configuring an OPC UA Data Collector please see the appropriate section of the help file.

To add a new Data Collector using the wizard right click on the **Data Collection** icon in the tree view and select **Data Collector Wizard**.

1. The first page provides a basic summary of what the Wizard is used for.



2. This dropdown allows selection of what kind of OPC Server the data will be logged from. Selecting **OPC Data Access (2.x) Interface** configures a connection to an OPC DA Server.

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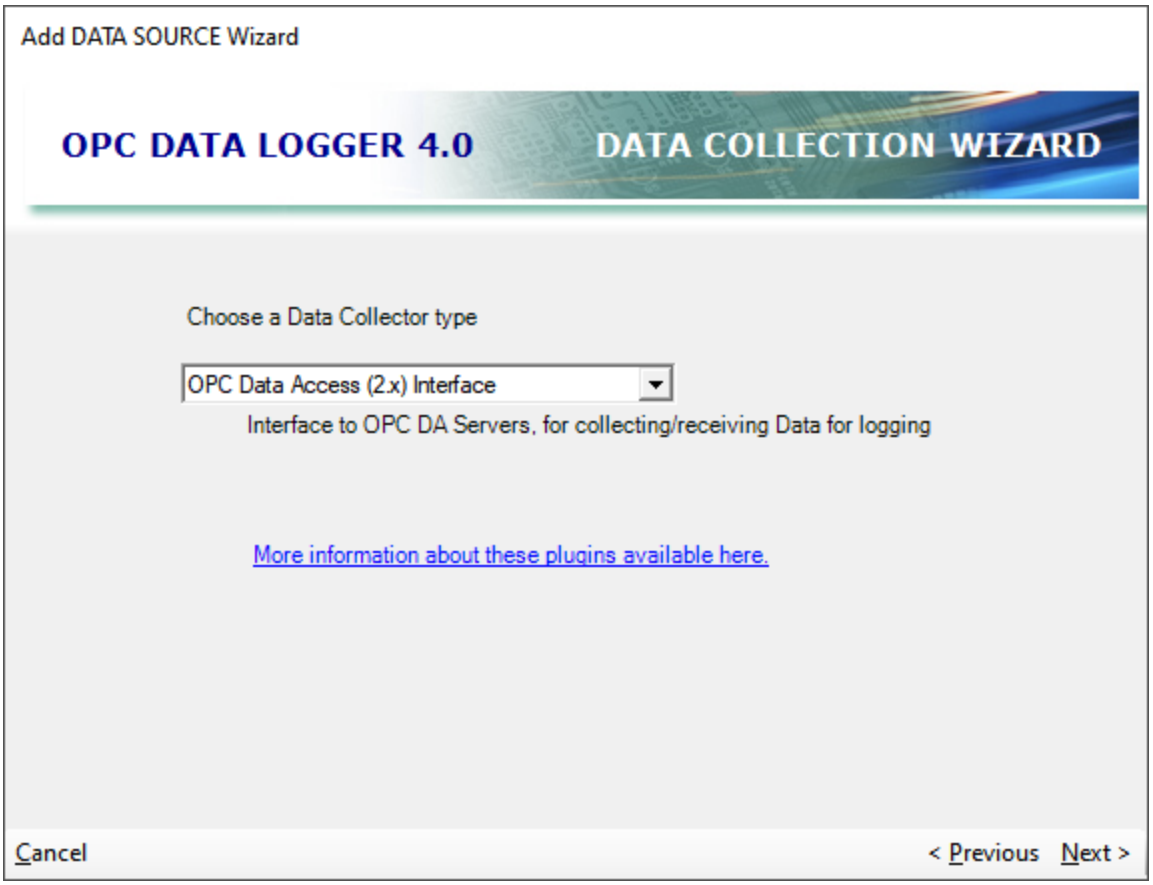

NOTE: The data collector types available in this drop-down box will vary depending on which options were selected for installation.

3. This dialog allows configuration of a friendly **Name** for this Data Collector. The friendly name will be displayed in the tree view, and will be how the Data Collector appears to other components in this project.

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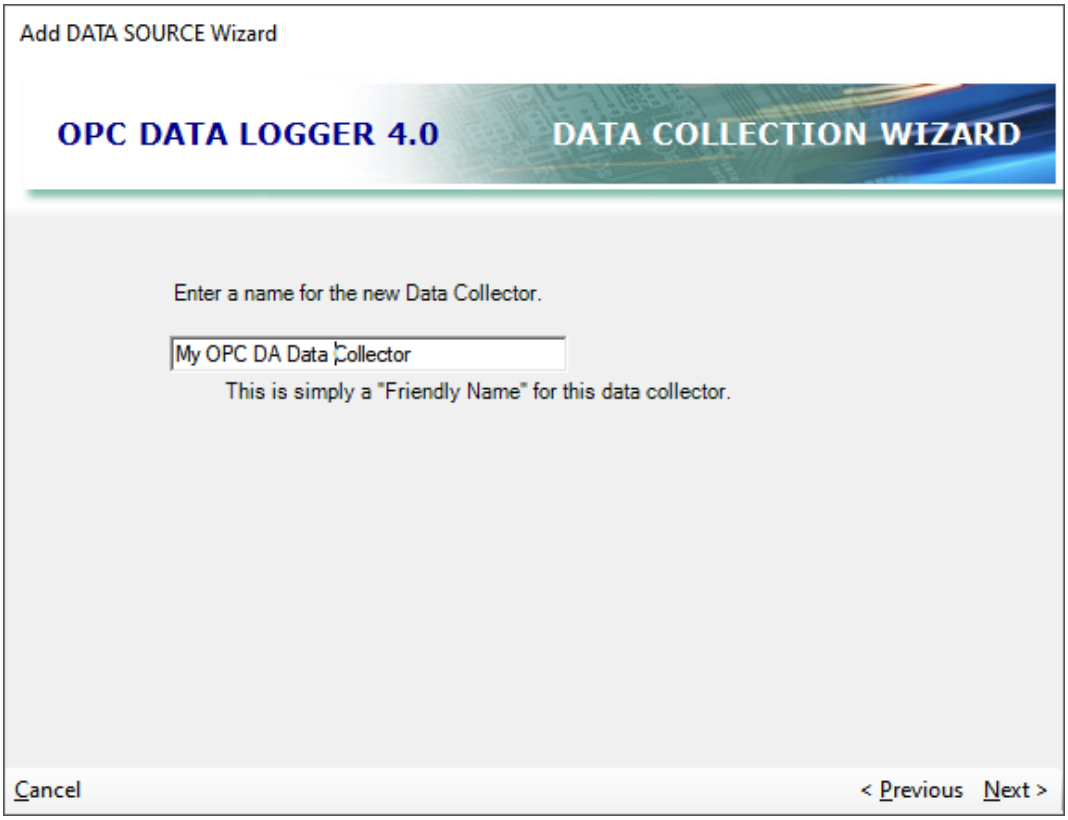

4. The **Computer Name** specifies the machine where the OPC Server is located, and can be selected by specifying the name, or the IP Address. A local connection should use the loop back address of 127.0.0.1. You can type in ProgID manually and click the + button to add your own ProgID.

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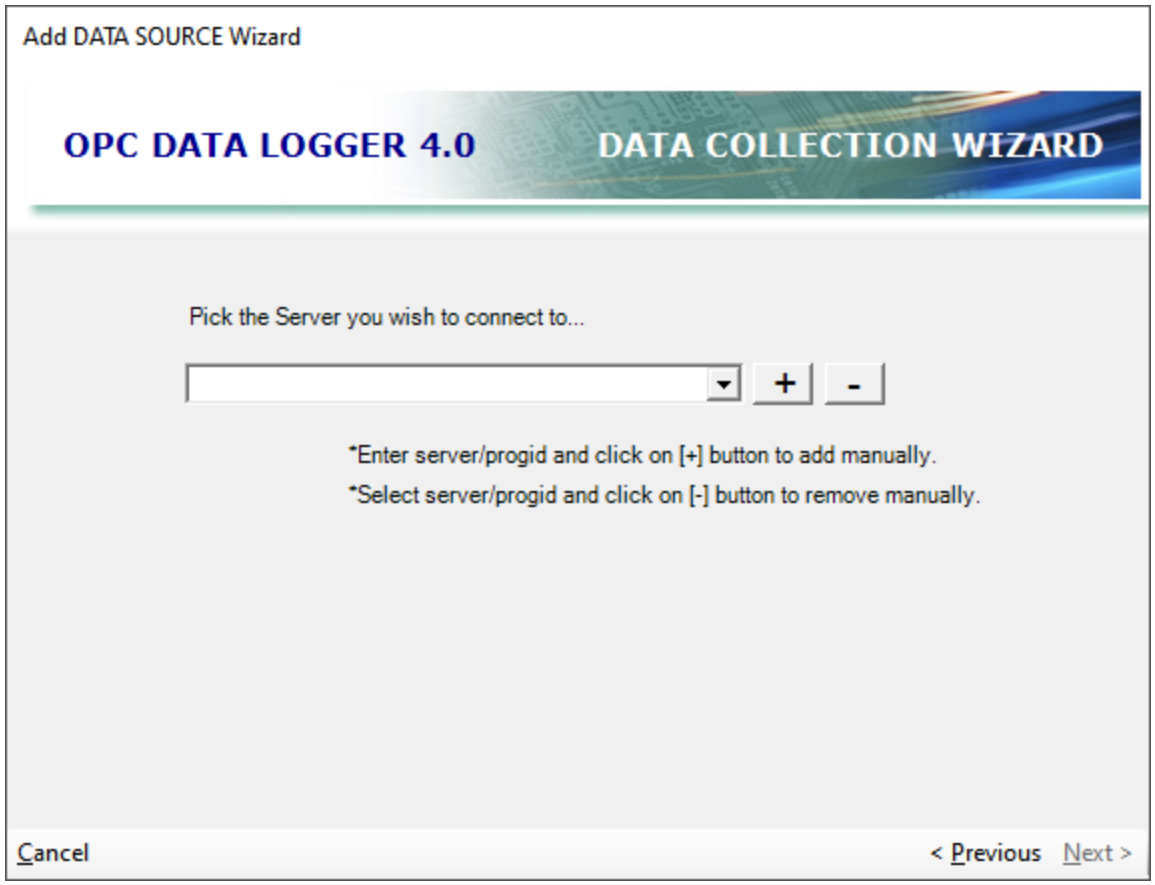

5. The dropdown will display all the OPC Servers on the previously selected computer, and will specify which server data will be collected from.

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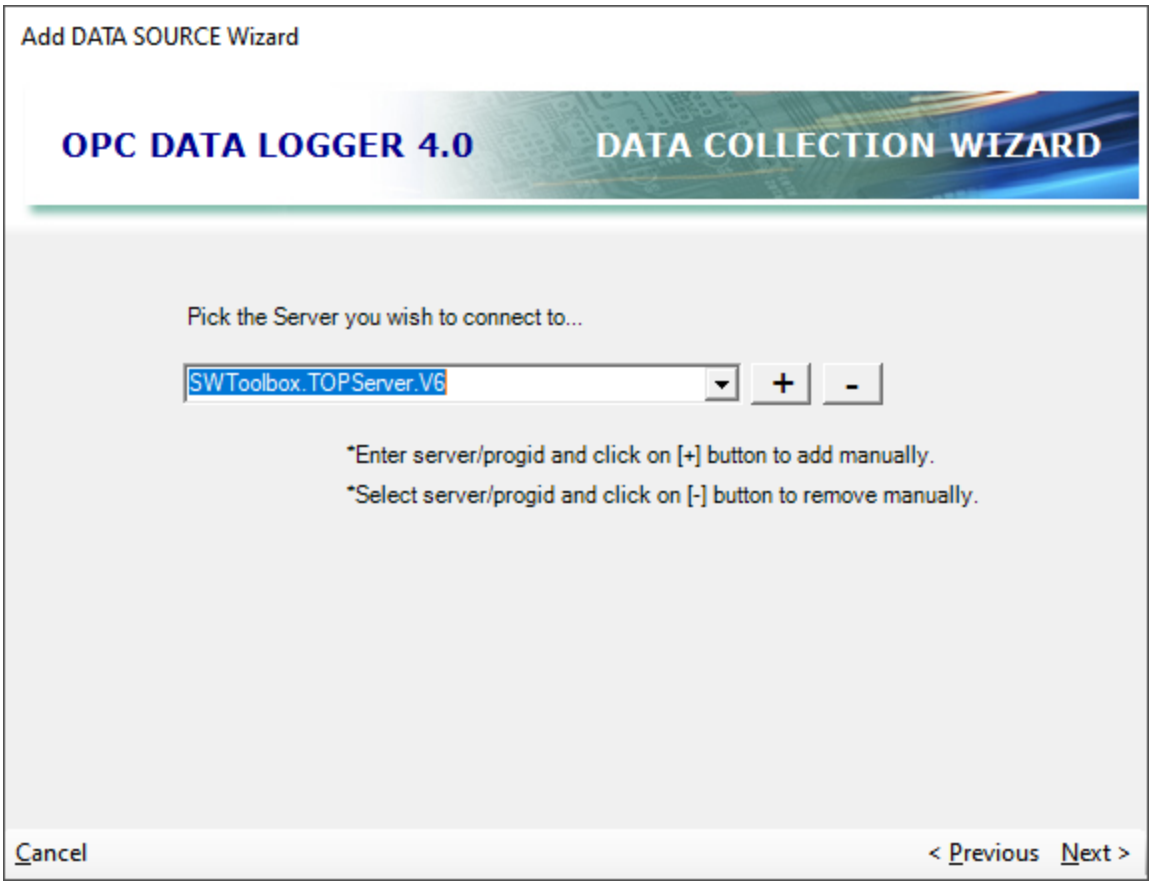

6. The last screen will summarize the selections for review, and finalize the settings.

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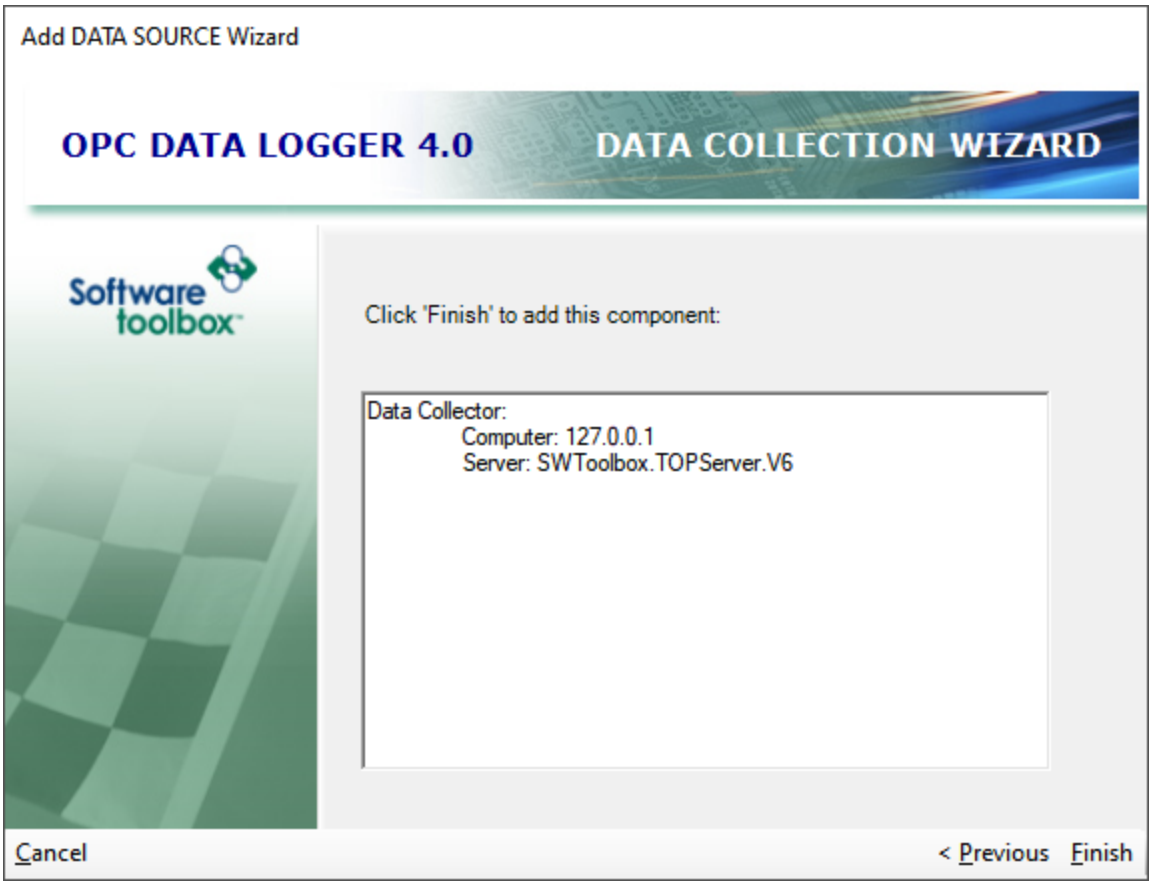

3.2.1.2 OPC UA Data Collector Wizard

In an OPC Data Logger Project the Data Collector specifies the source of the data, and establishes the connection to the OPC Server. The Data Collector Wizard aids in the configuration of an OPC Data Access (DA), or OPC Unified Architecture (UA) server. This section details the creation of an OPC UA Data Collector, for help with configuring an OPC DA Data Collector please see the corresponding section of the help file.

A new Data Collector can be added to an OPC Data Logger configuration, using the Wizard, by simply right clicking the **Data Collection** section in the tree view, and selecting **Data Collector Wizard.**

1. The first page of the Wizard will confirm that the Data Collection Wizard was selected, and what the Wizard is used for.

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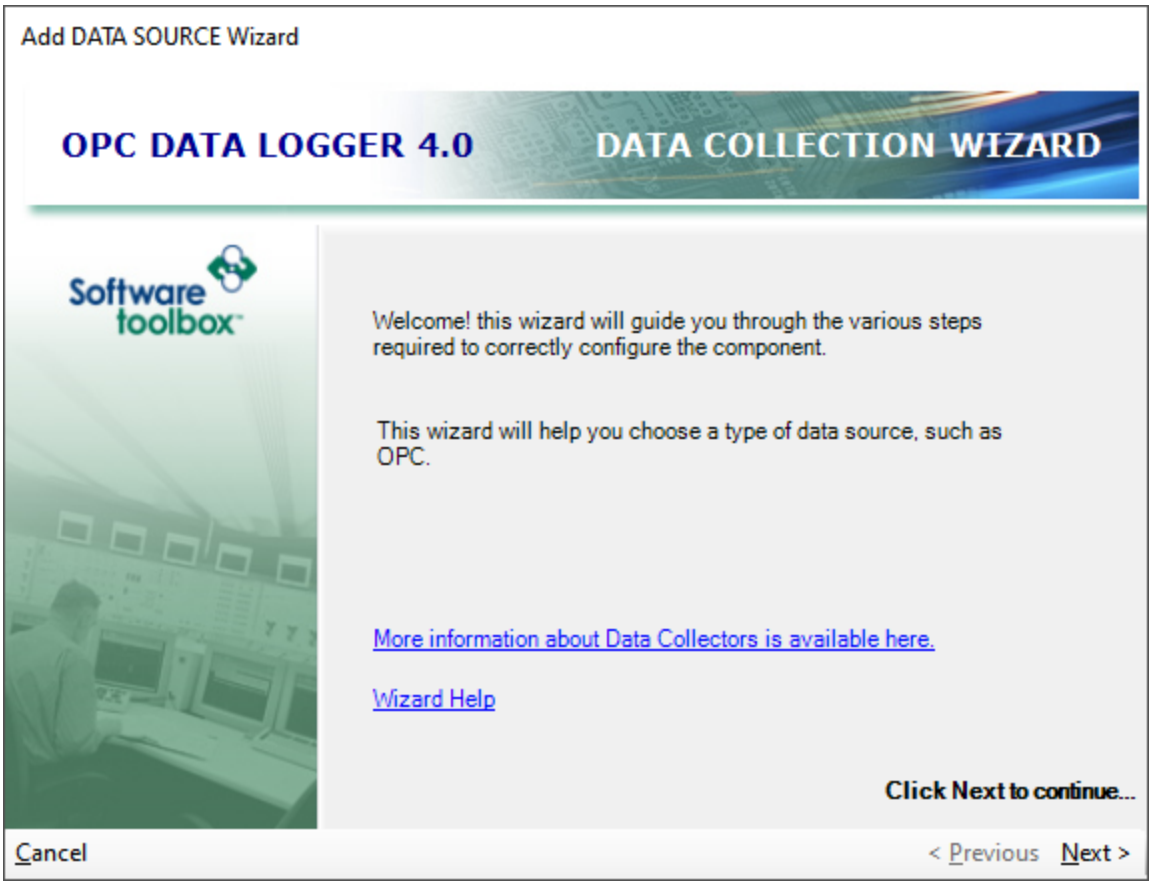

2. In order to connect to an OPC UA Server, the **OPC Unified Architecture (UA) Interface** must be selected as the Data Collector type from the drop down.

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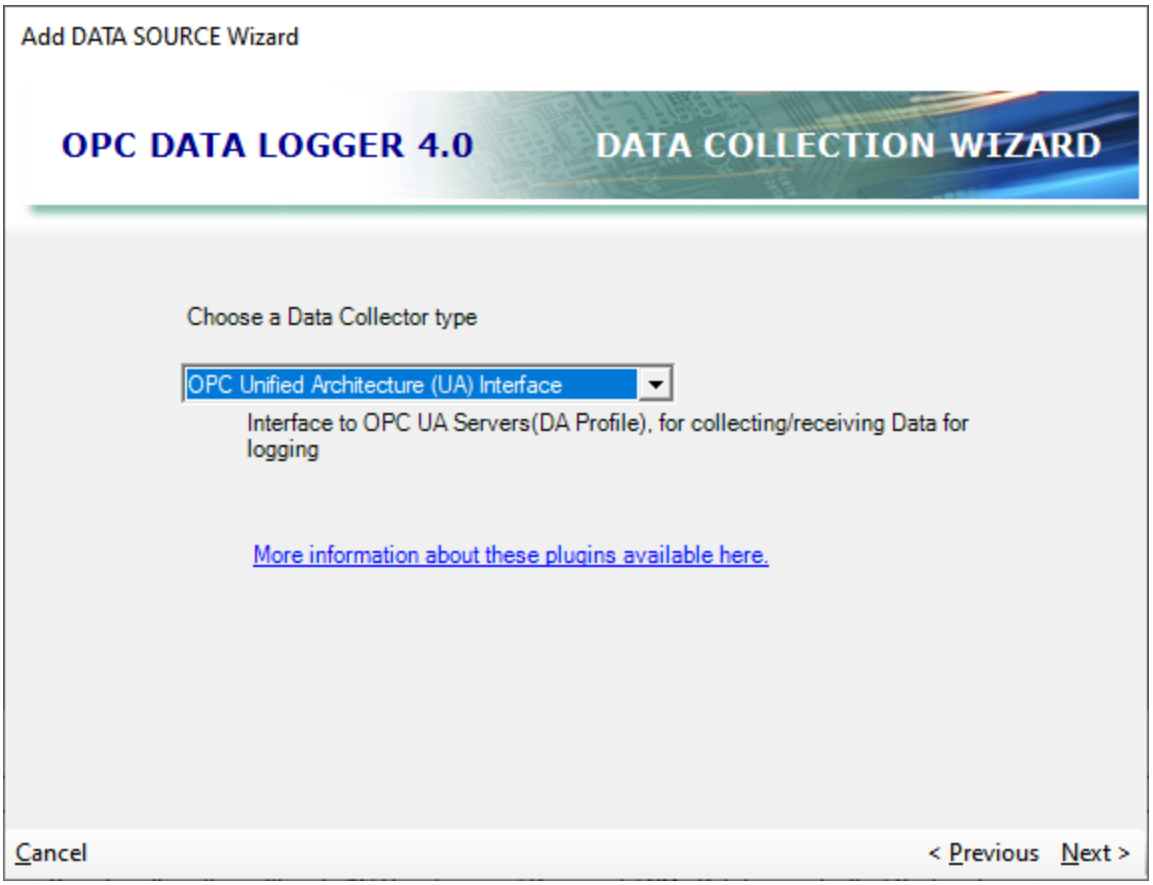

NOTE: Depending on which components were selected for installation the Data Collector Types available may differ from installation to installation.

3. The third page of the Wizard allows for configuration of a user defined name for the Data Collector. This name will be how the Data Collector appears in the OPC Data Logger tree view.

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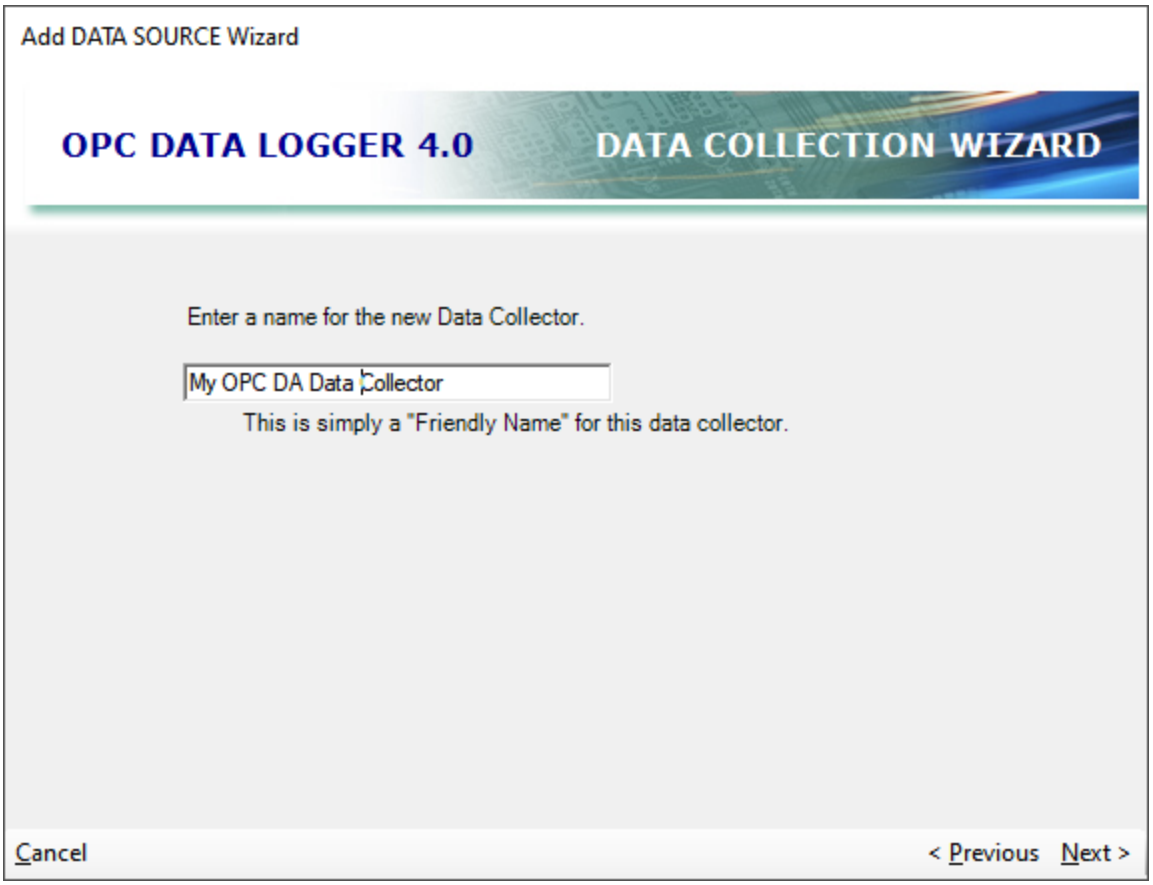

4. The fourth page of the Wizard will configure the actual connection to the OPC UA Server.

    1. **Discovery URL:** The Discovery URL is optional, and can be used to point to an OPC UA Discovery Service.

    2. **Server URL:** The Server URL specifies the OPC UA Server end point. If a Discovery Service was configured, the drop down can be used to browse for the server endpoint.

    3. **Security:** The Security setting sets the OPC UA Security Level, and must match what is configured for the server.

       Note: If using a Discovery URL and changes have been made to the Server URLs, or the Security Level, the Refresh button should be used to re-query the service for the list of available servers.

    4. **User Authentication**: If the OPC UA Server requires credentials, the Use Authentication checkbox will allow the configuration of a Username and Password.

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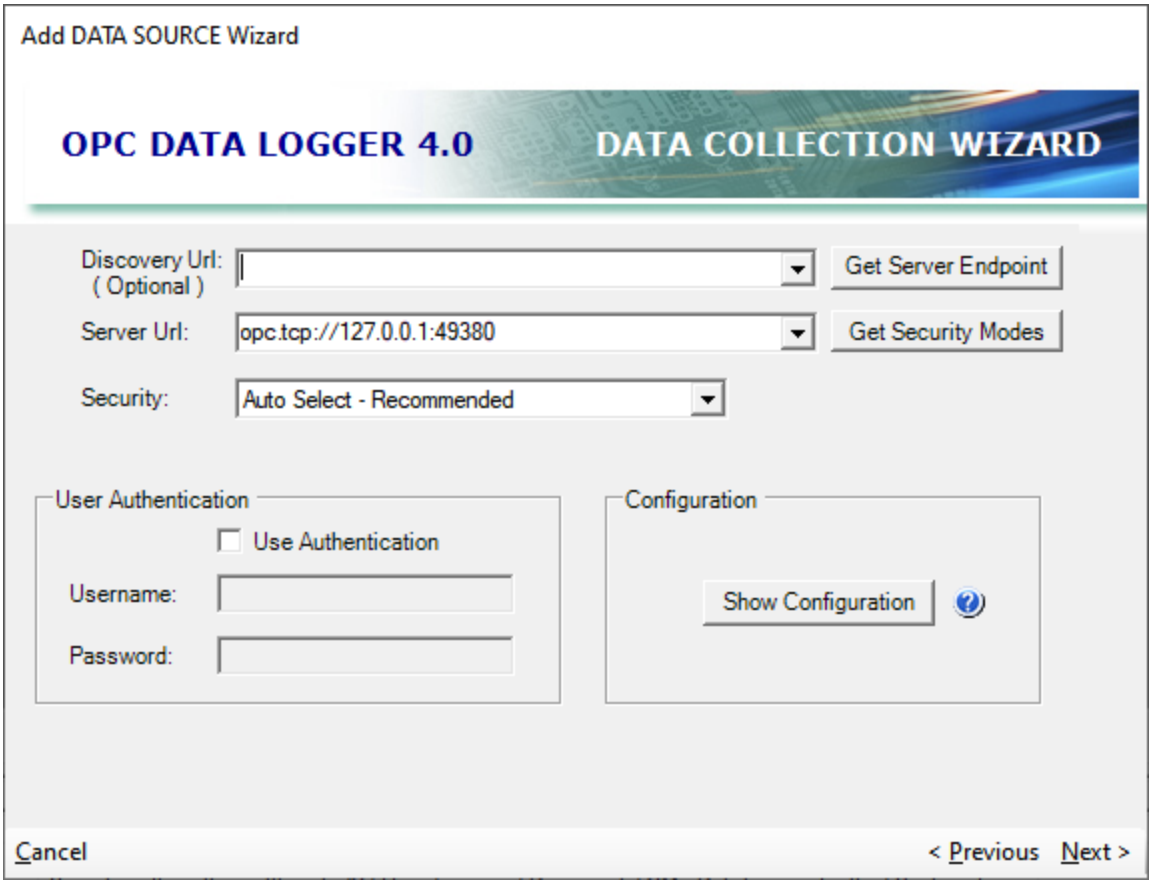
5. **Configuration**: The *Show Configuration* button can be used to manage OPC UA Certificates, if the connection between the OPC Data Logger and the OPC UA Server will be certificate based. This button will launch the OPC UA Configuration Options Dialog



5. The last screen of the Wizard will summarize all settings, and selecting **Finish** will finalize the OPC UA Data Collector configuration.

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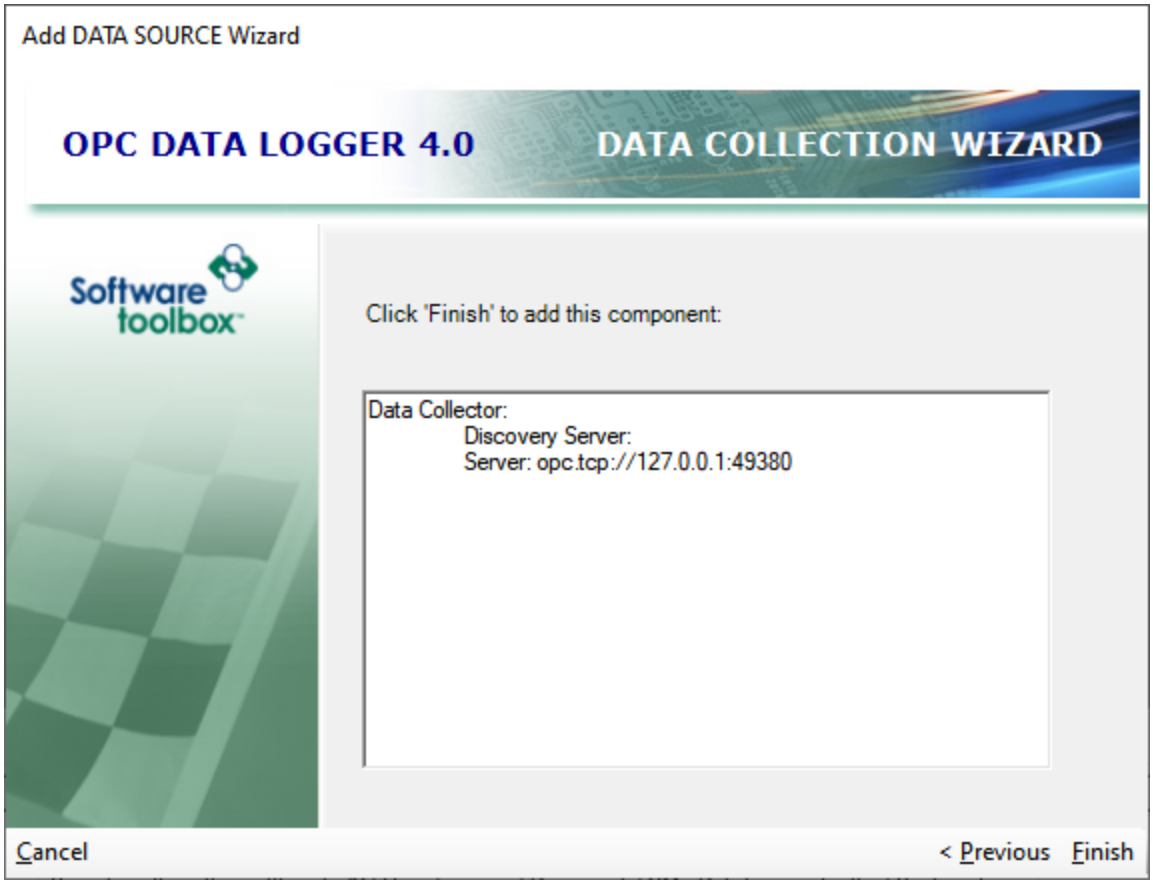

3.2.2 Data Presentation

A Data Presentation determines the format in which the data will be logged to the Data Storage. Each Data Storage uses a single Data Presentation, but a Data Presentation can be used across multiple Data Storages. The Data Presentation determines which attributes are logged, how the data is organized, as well as how data fields are formatted as they are being logged.

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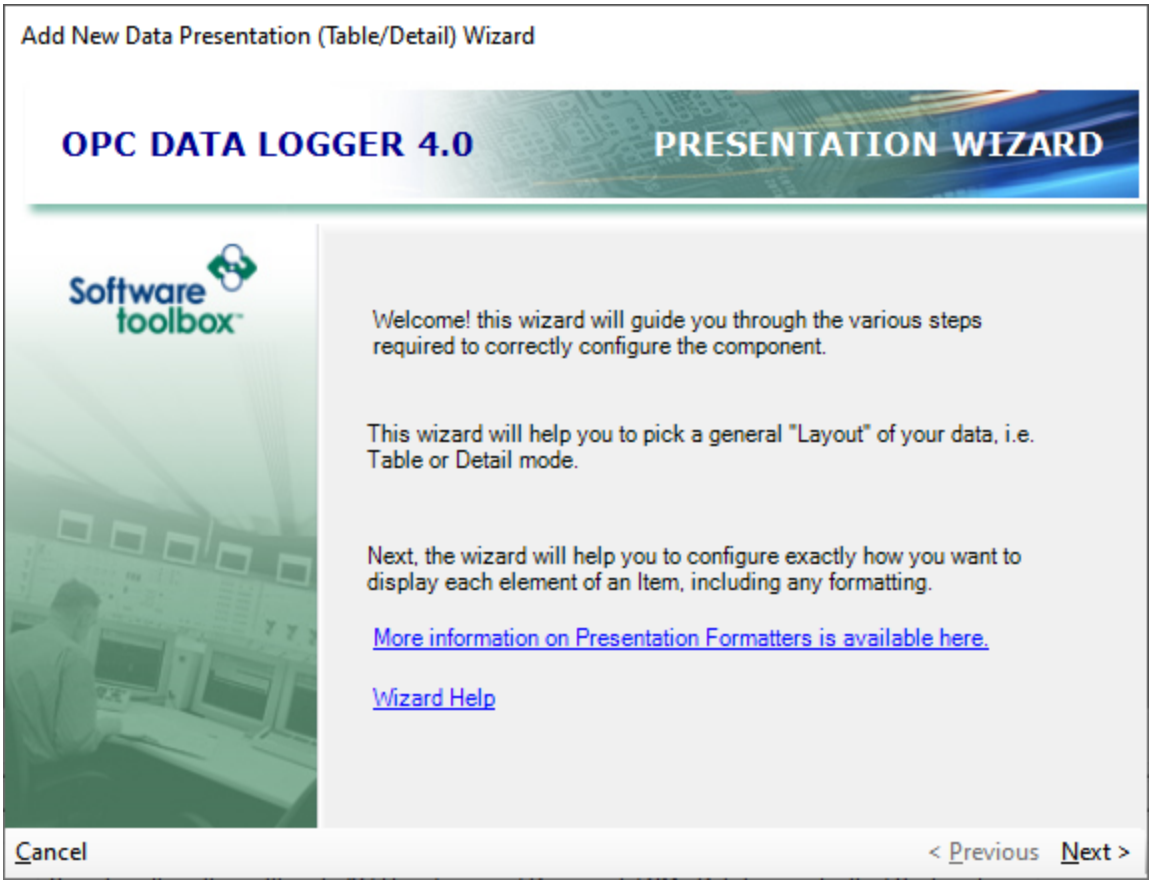
The Presentation Wizard allows for easy configuration of a new Data Presentation format. To access the wizard right click on the **Data Presentation** icon, in the tree view, and select **Presentation Wizard**.

1. The first page will summarize the purpose of the Wizard, and what the Data Presentation is used for.



2. The second page determines the presentation mode – the general layout with which the data will be logged. Two presentation modes are available:

    1. Table mode will log all Data Points in a single row, separated into columns. The first column showing the timestamp at which the data was logged, and all following columns showing Data Point values.

    2. Detail mode will log a single data point per row, with each column showing the value of a different attribute.

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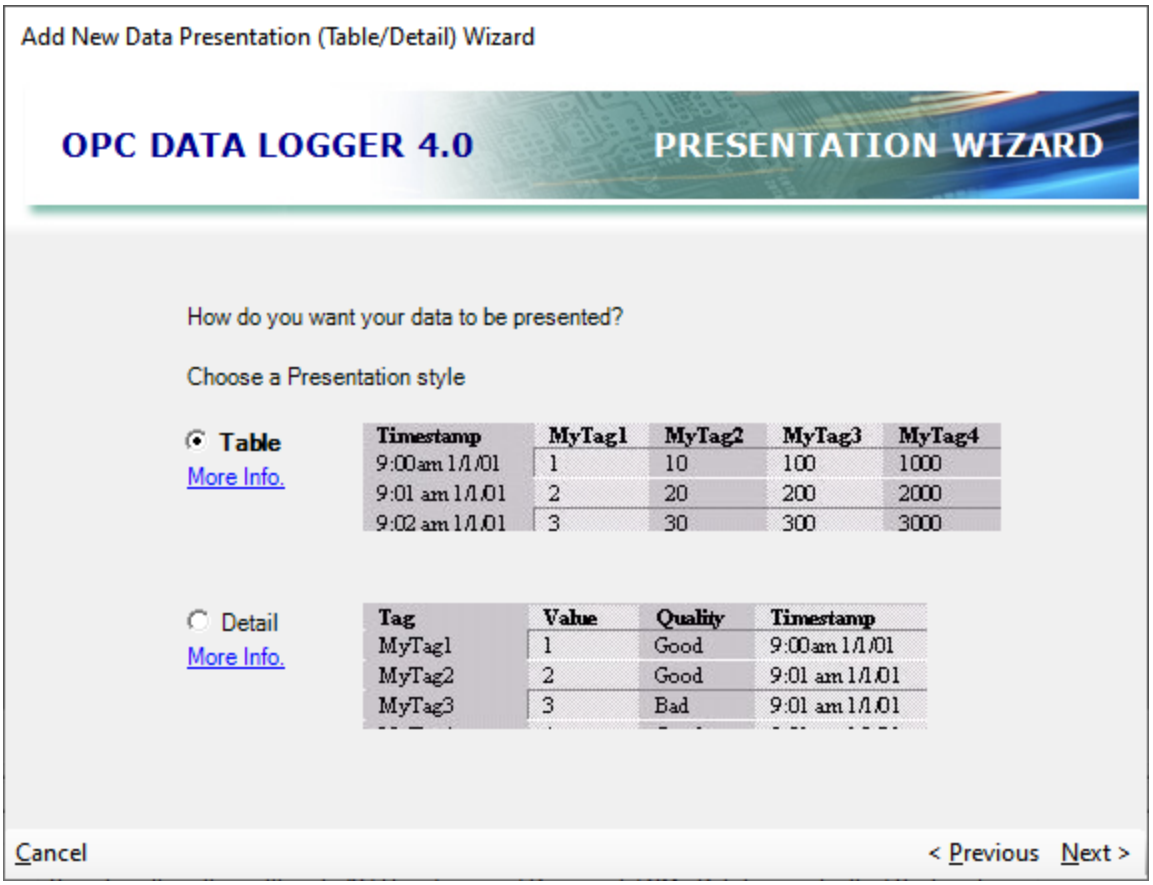

3. Once the Presentation mode is selected, the Data Presentation must be given a name – this will be how the Data Presentation will appear in the OP Data Logger tree view. An optional Description can also be given here.

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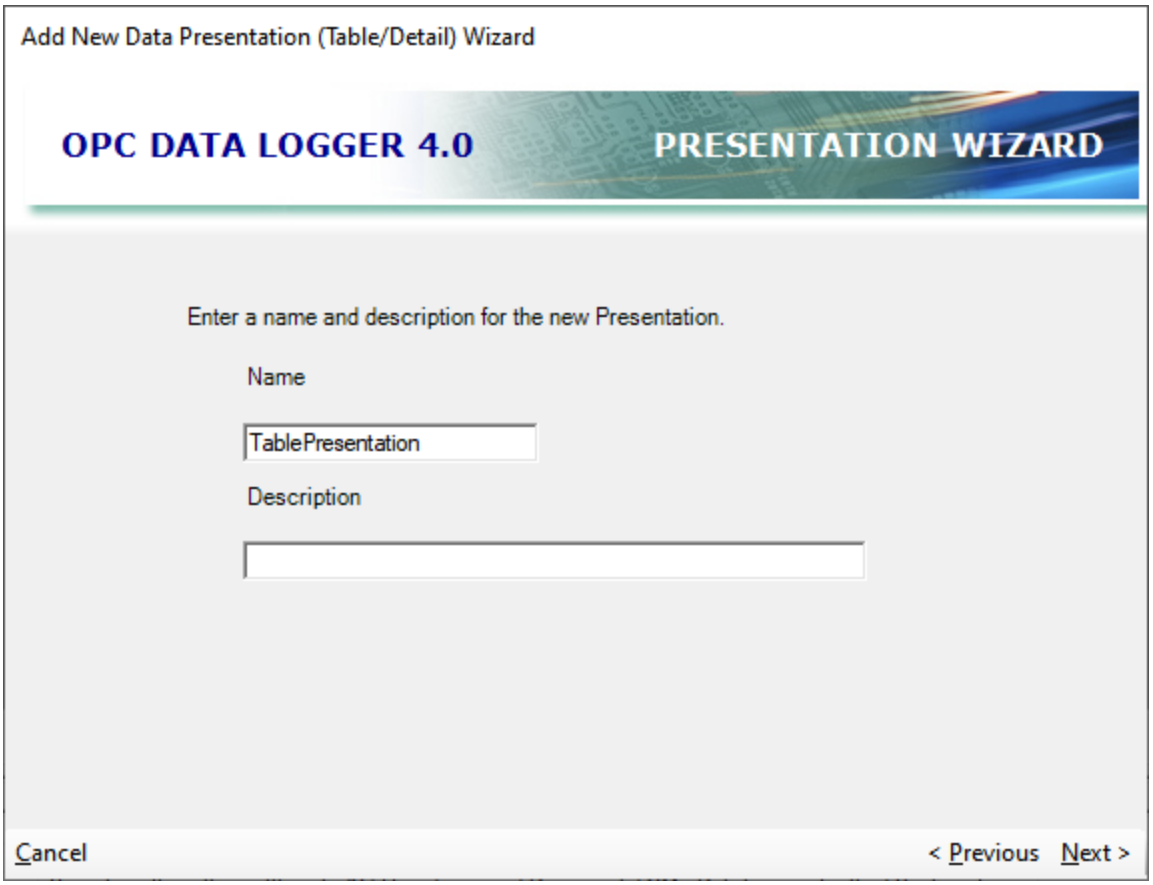

The next two dialogs will vary, depending on which presentation mode was selected.

Using Table Mode Presentation Style

4. This page will give a sample of what the data will look like if logged in Table Mode.

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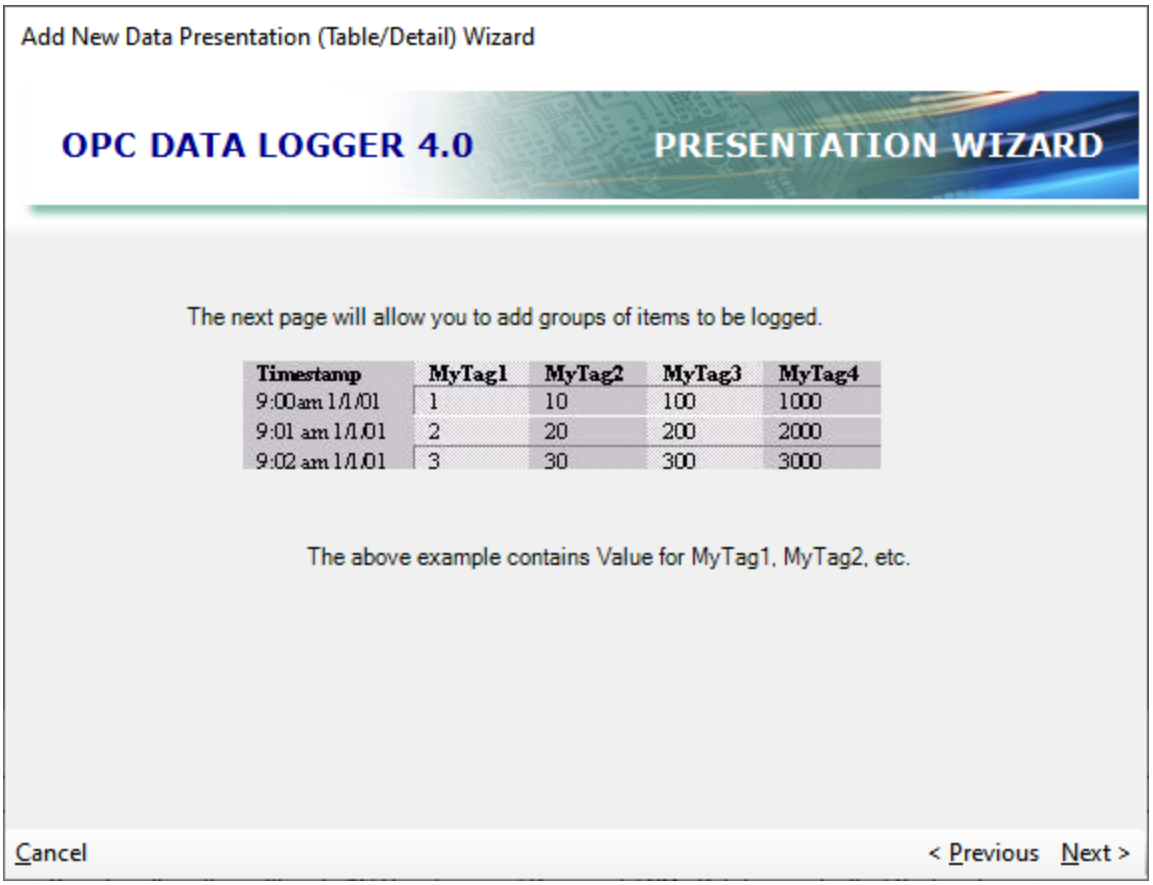

5. This page configures which groups are logged in this Data Presentation.
   a. **Add Group** brings up a list of all Logging Tasks and Groups, and allows for selection of which data points should be logged in this Presentation.
   b. Once a group is added, the order of individual items can be changed via the Blue Up/Down buttons.
   c. In Table Mode the attribute cannot be changed for any data points. The FormatString can be set to change the format in which the data is logged.

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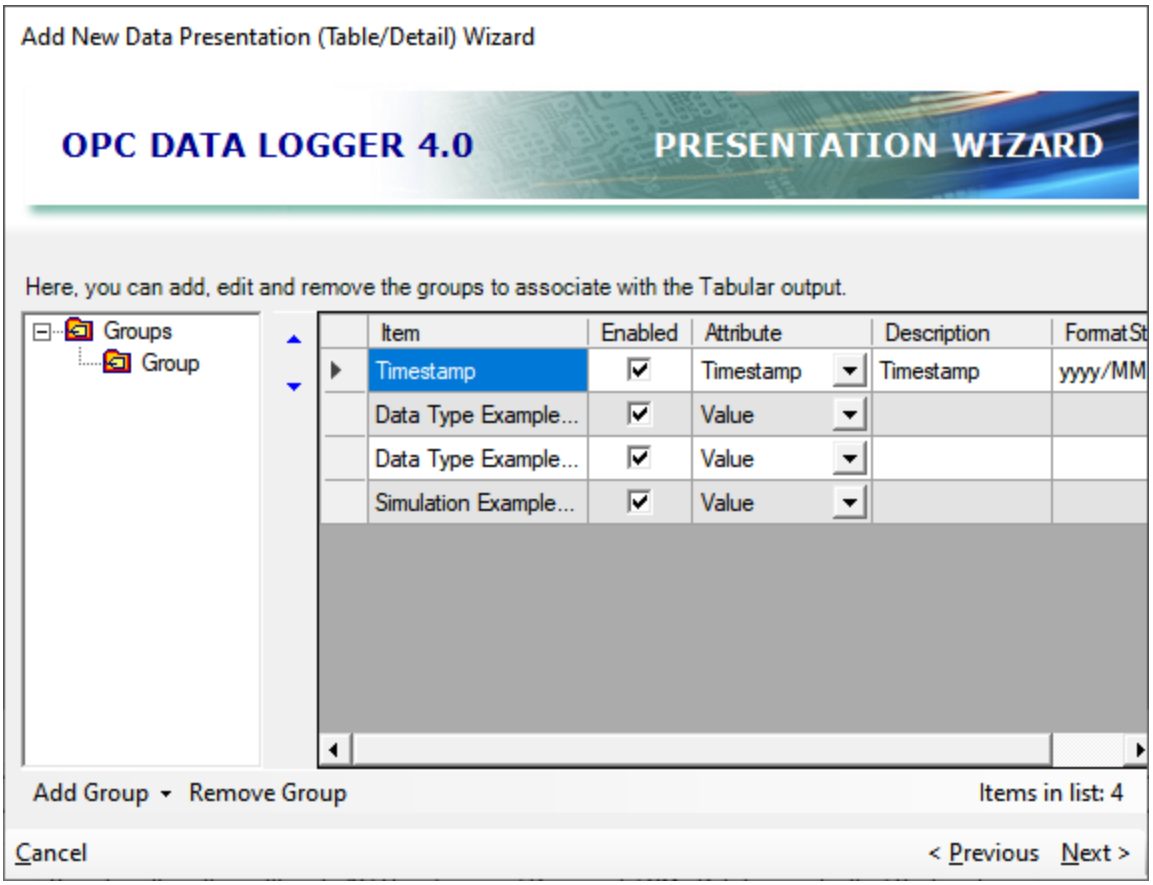

Using Detail Mode Presentation Style

6. This page will give a sample of what the data will look like if logged in Detail Mode, when using the default VQT attributes.

    a. **Automatically add the pictured columns**: this checkbox will automatically add the default attributes; Value, Quality, and Timestamp.

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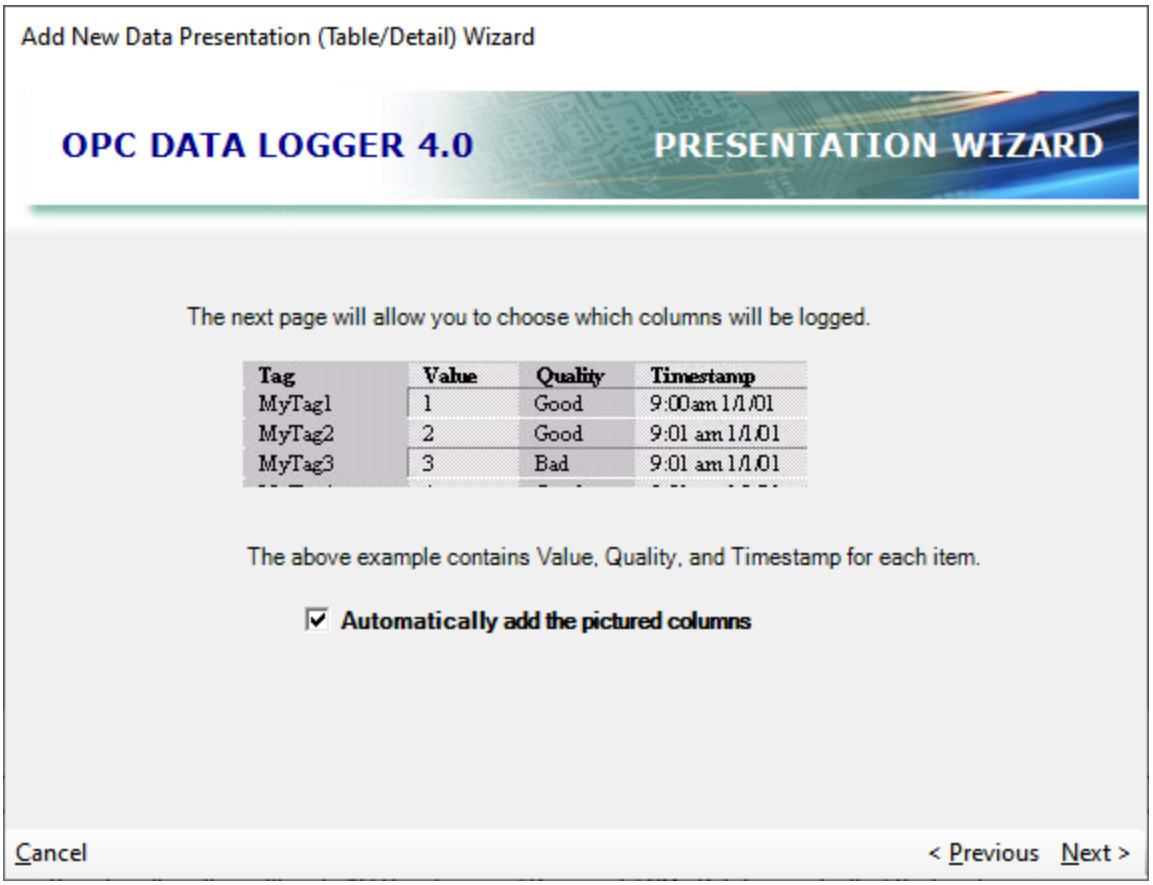

6. This page controls which attributes will be logged for each data point.

   a. The Add button will create a new line in the table, and the drop down determines which attribute will be logged.

   b. Attributes can be re-ordered via the blue Up/Down buttons.

   c. The FormatString field can be used to specify the data format in which the selected attribute will be logged.

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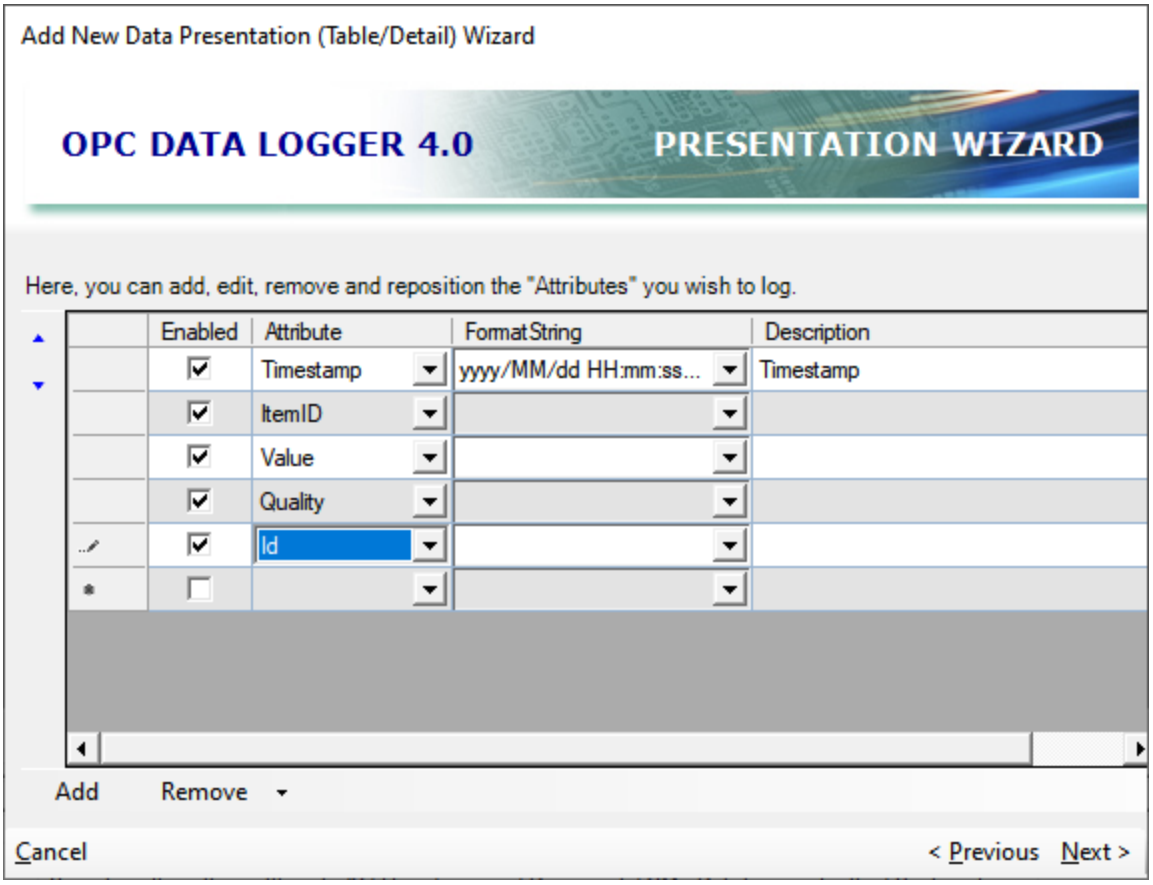

6. The final page of the Wizard – regardless of which Presentation mode was selected – will summarize all settings. Selecting to Finish finalizes all settings, and creates the Data Presentation.

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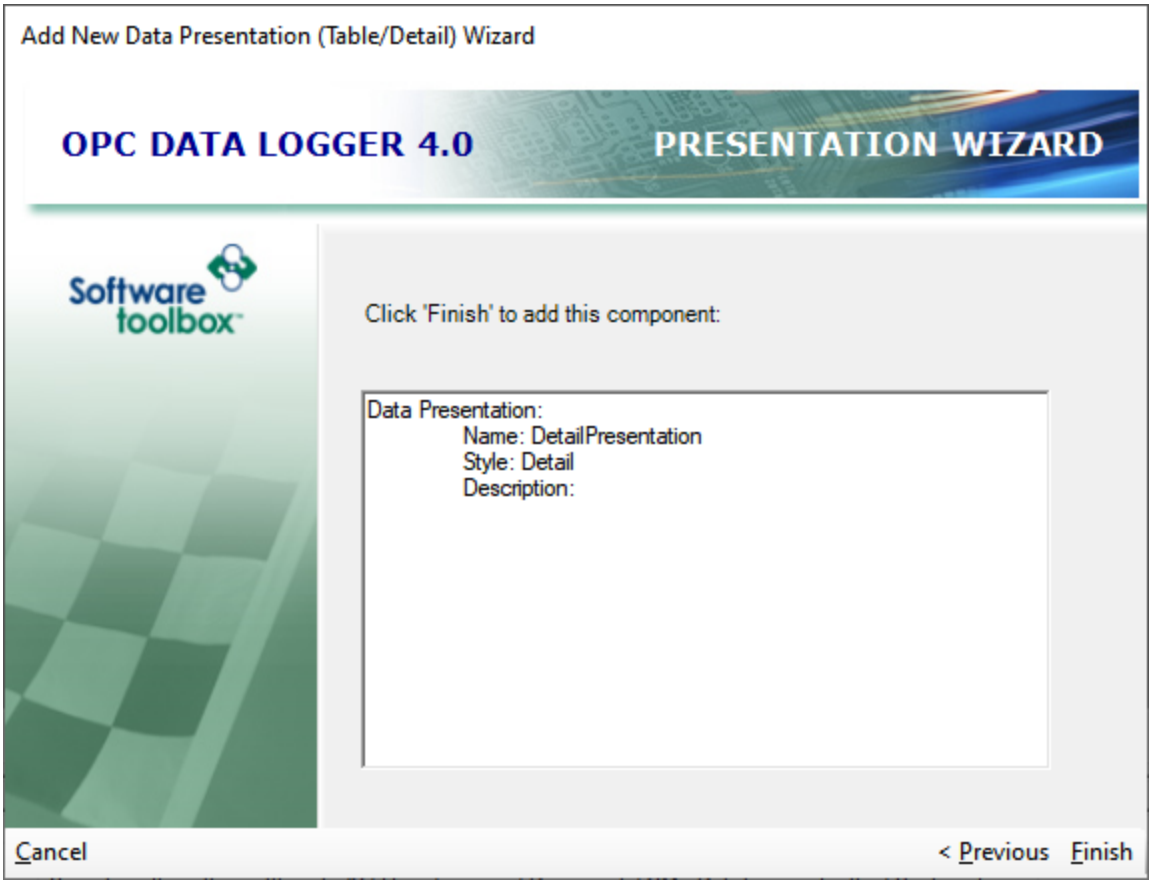

3.2.3 Data Storage

The Data Storage Wizard configures the interface between the OPC Data Logger, and the storage medium.

The Wizard differs depending on whether logging to a text file, or a database.

- See Database Wizard for configuring a database store.
- See Text File Wizard for configuring text file store.

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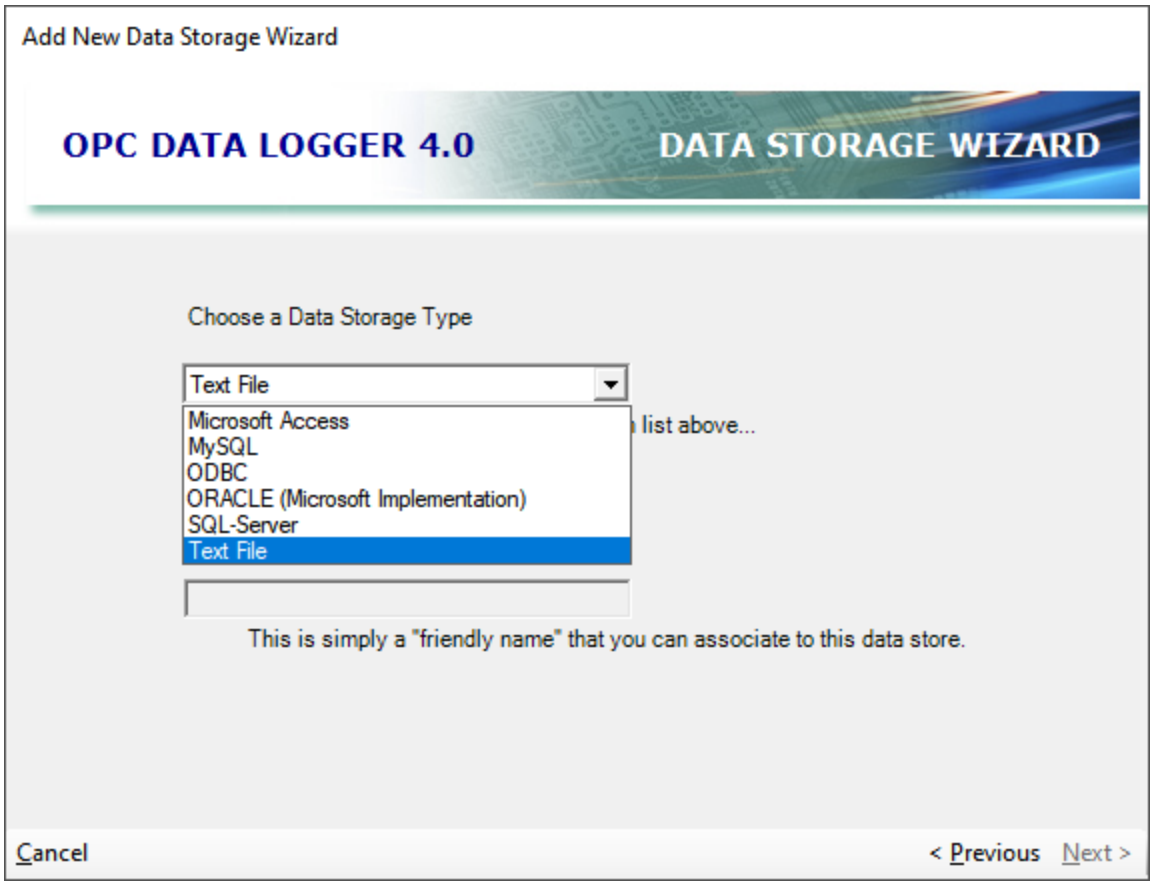

3.2.3.1 Database Wizard

The easiest way to add a new Database Data Storage component is by using the OPC Data Logger Wizards. Depending on which features were selected for installation, not all features described here are guaranteed to be available.

To launch the Database Wizard, right click on the **Data Storage** item in the OPC Data Logger global components list, and select the **Data Storage Wizard** item.

This section of the help file pertains specifically to database Data Stores; for help configuring a text or CSV file data store, refer to the Text File section of the help file.

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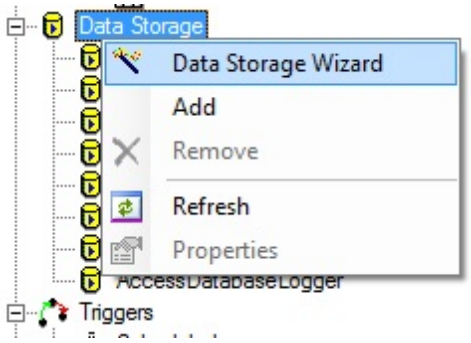

1. The first page of the Wizard will summarize what the purpose of the Wizard is used for.

2. Specify the type of Data Storage that should be created. This will determine what kind of database the data will be logged to. Once a **Data Storage Type** has been selected, the Data Store should

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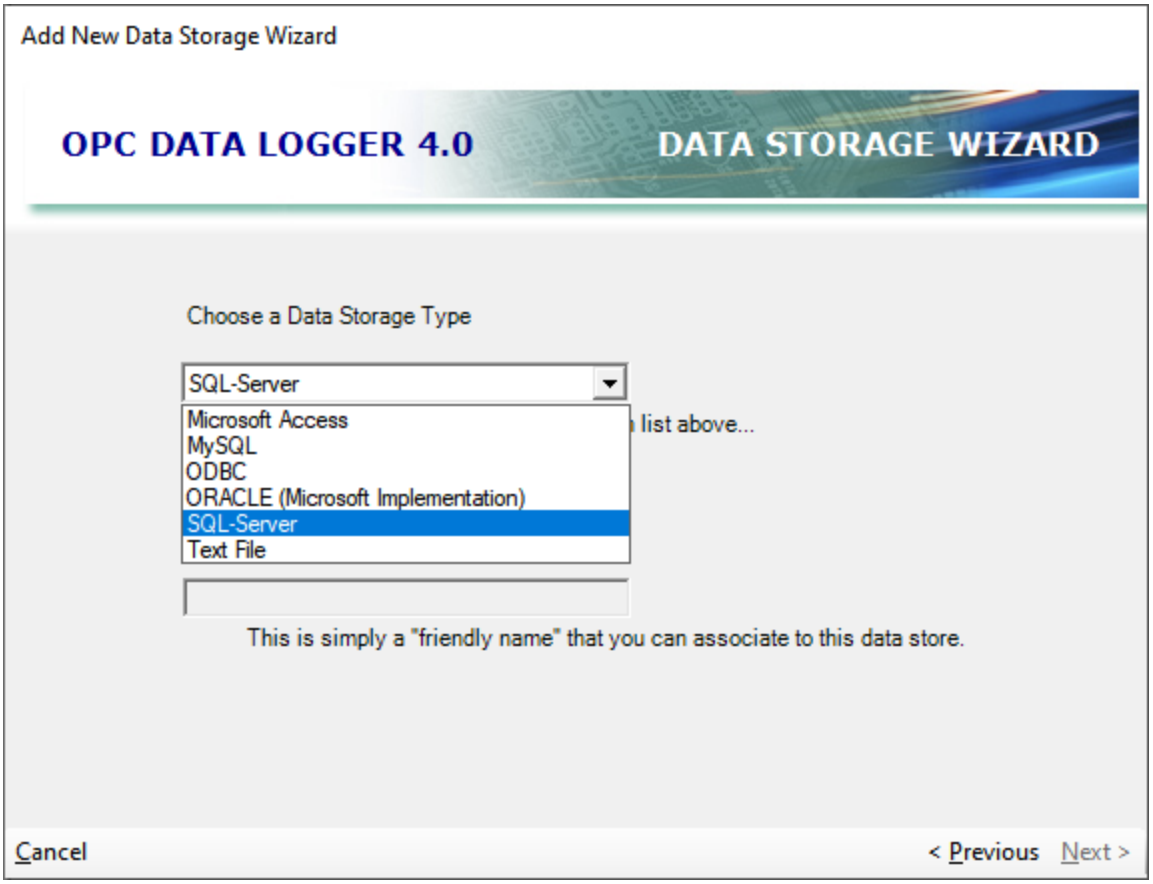
be given a name – this will be how the Data Store appears in the Global Component tree view.



Note: Not all Data Storage Types shown above are guaranteed to be present, depending on what features were selected when the OPC Data Logger was installed.

3. Specify the **Presentation Format** with which data will be logged to the database. Any existing Presentation formats can be selected from the drop down. Alternatively, the *New Presentation* button can be used to jump to the Presentation Wizard and create a new data presentation.

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Depending on which Data Storage Type was selected in step 2, the next step will vary.

SQL/MySQL Server Database

4. When logging to a SQL Server/MySQL database, specify the name or IP address of the computer where the SQL/MySQL Server instance is running. The database name must also be specified.

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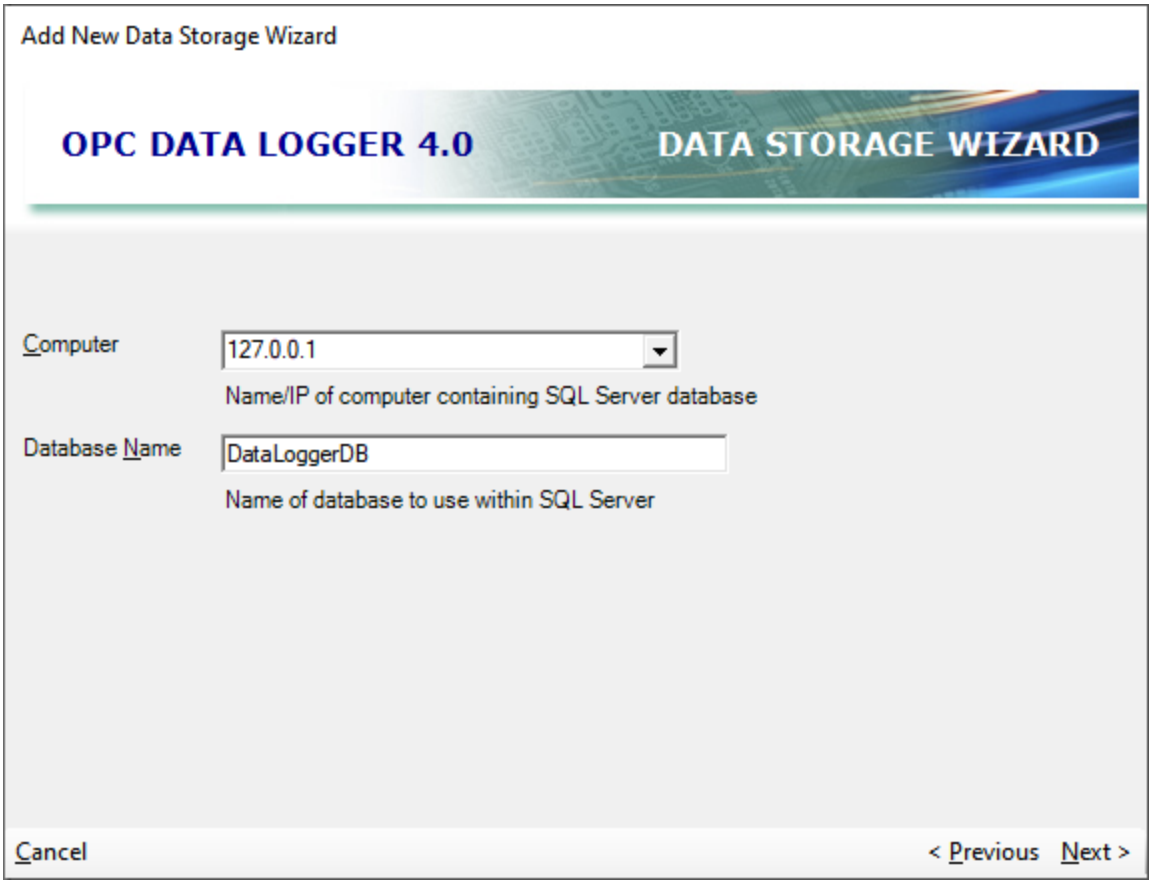

Access Database

4. When logging to an Access database, specify – or browse to – the fully defined path and file name of the Access database. This file (.mdb) must exist prior to setting the path in the OPC Data Logger.

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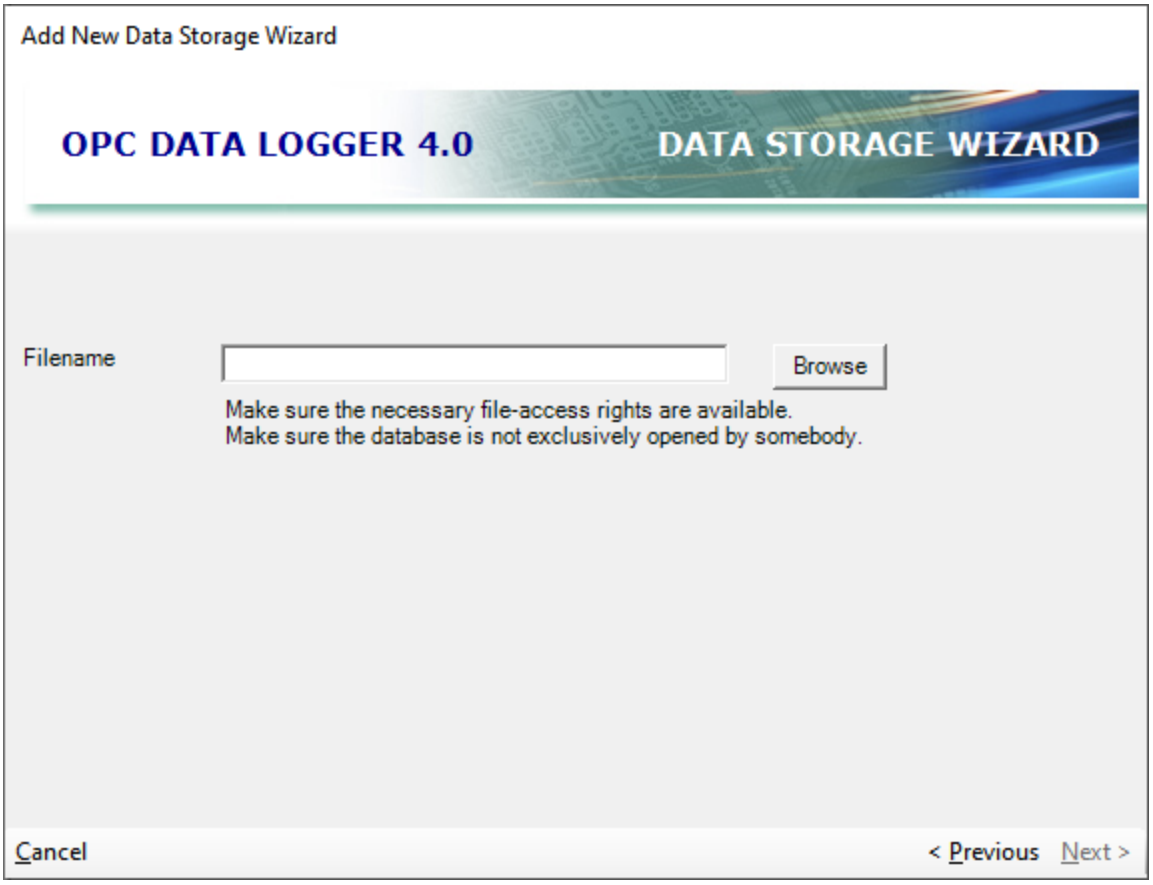

ODBC

4. When logging to an ODBC Data Store, specify the ODBC DSN for the desired data storage. Clicking the Data Sources button will open the ODBC Data Source Administrator in order to configure a new DSN.

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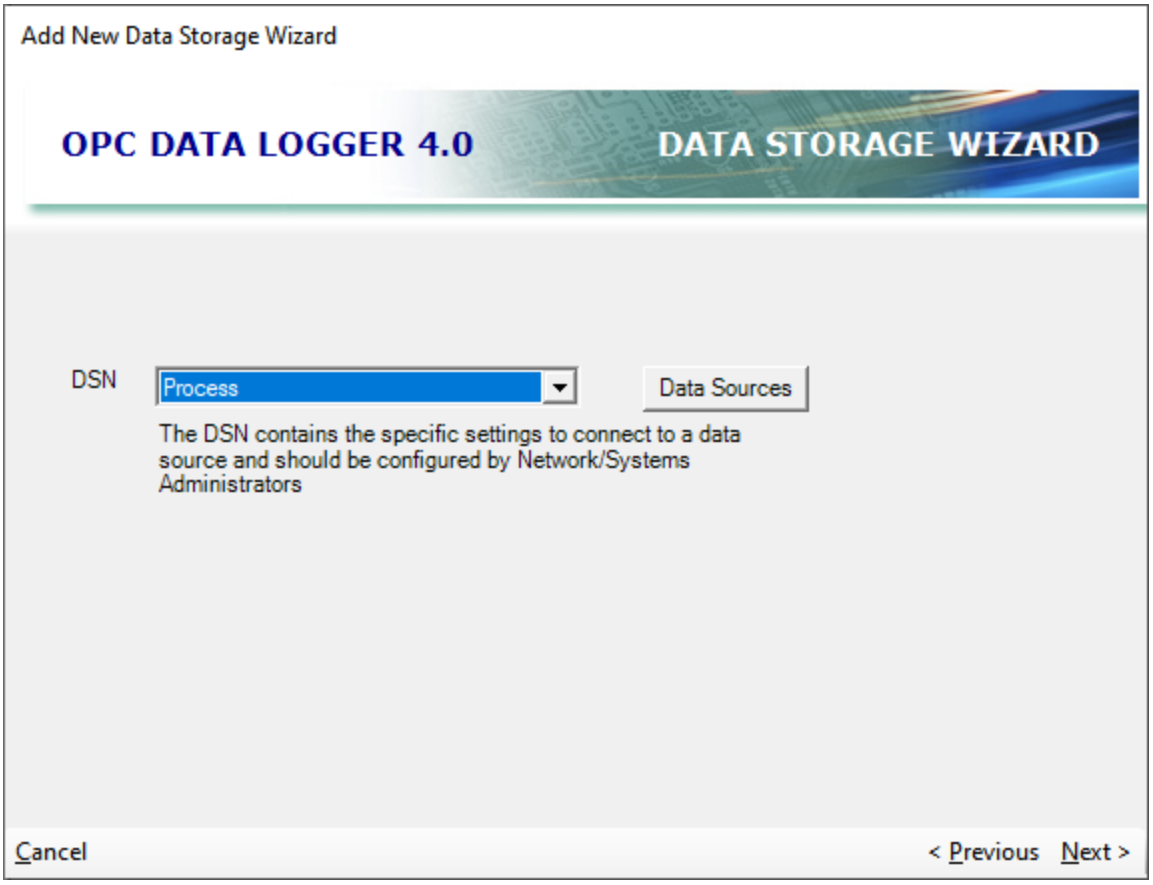

All Database Options

Once the database has been specified, the remaining settings will be similar between all data storage types.

5. Specify the authentication settings that the OPC Data Logger will use when attempting to connect to the database. If no user authentication is being enforced, the **Does not require Login credentials** setting should be selected. Specify a **User Name** and **Password** if the OPC Data Logger should authenticate with the database as a specify user account.

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Depending on the database type that was selected, not all of the available authentication settings above may be present.

6. When creating a new Data Storage using the Wizard, the connection to the Database must be tested before proceeding. Test the connection to the Database by using the **Test Connection** button – this test must indicate that the connection was successful before proceeding. If the test indicates that the connection attempt was not successful, verify that the settings in steps 4 and 5 are correct.

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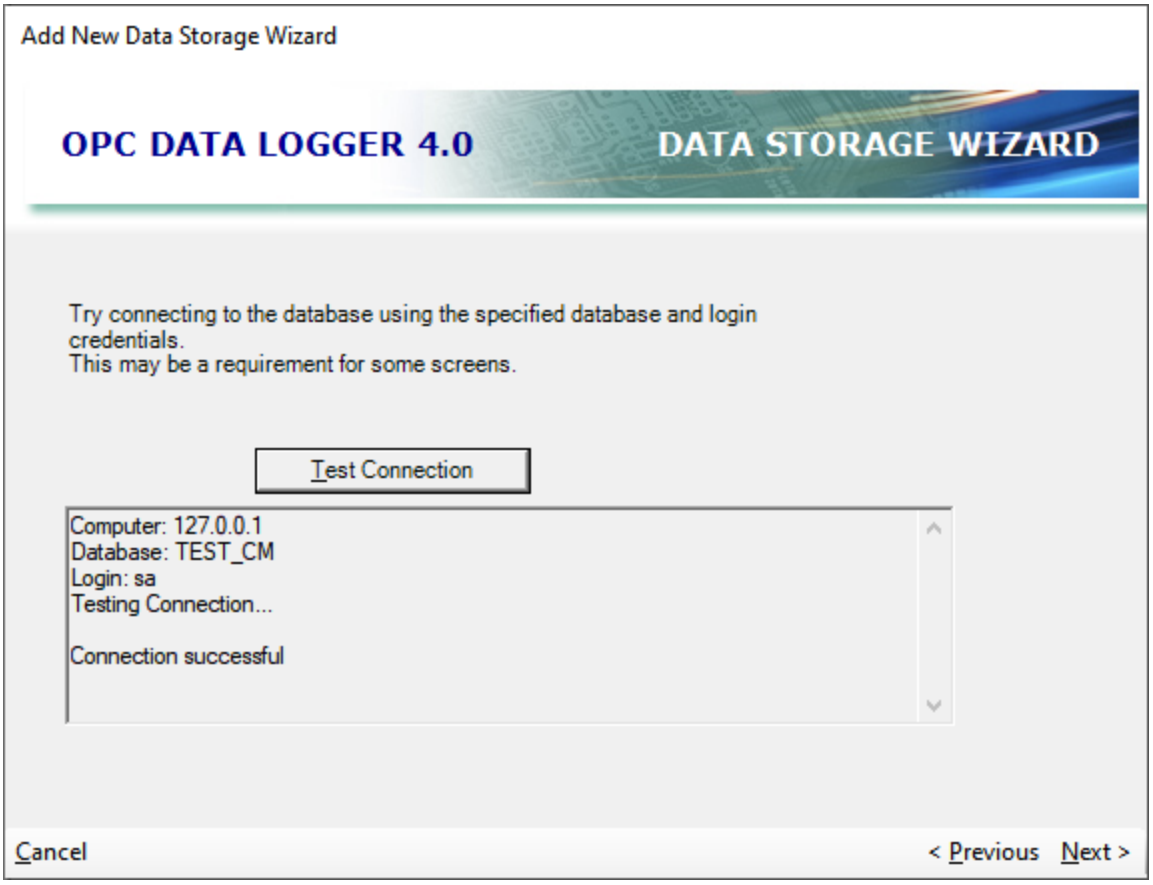

7. Select how the data will be inserted into the Database; the OPC Data Logger currently supports using a **Stored Procedure**, or inserting the data directly into the data **Table**. In order to use a stored procedure (faster) to log the data, the procedure must exist in the database. The OPC Data Logger supports creating a new table in the database via the Table Builder feature when directly inserting the data into the table.

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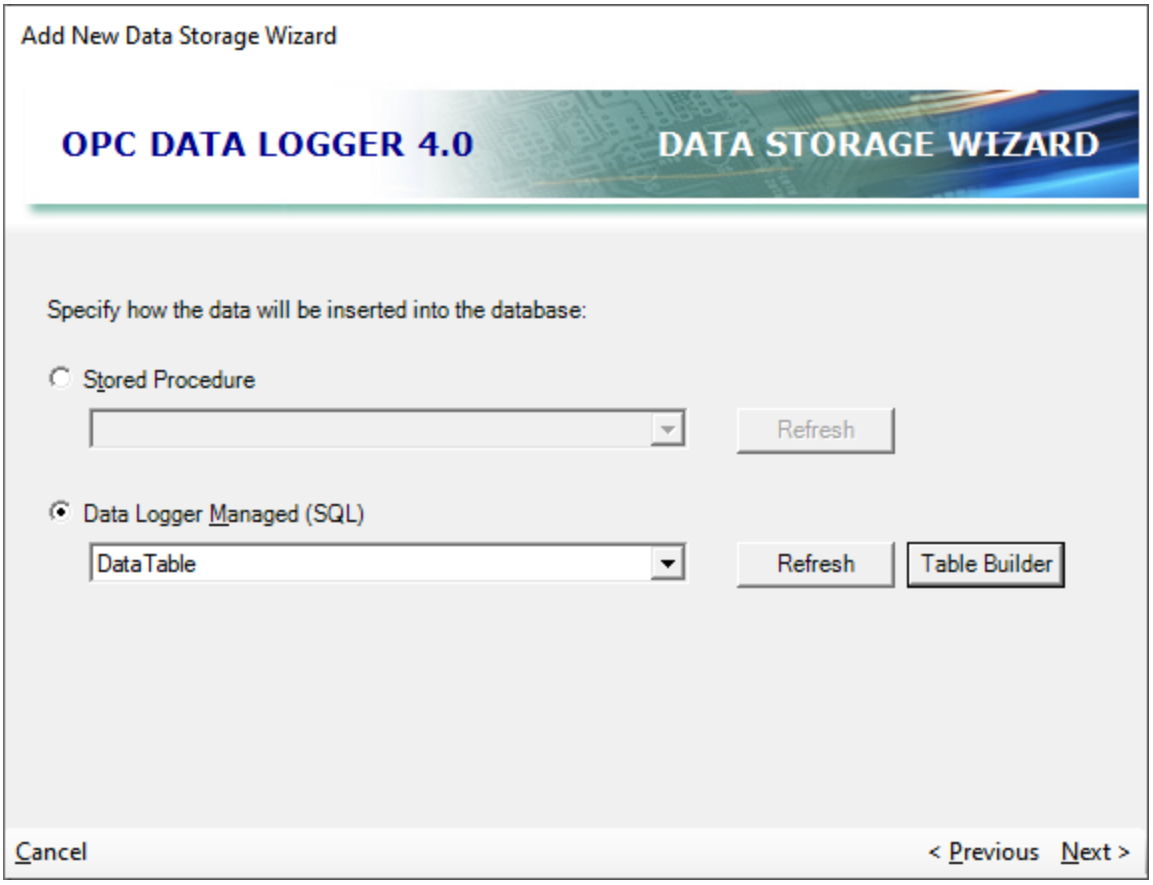

8. Once a table has been selected, the table **Field Names** must be associated with the OPC Data Logger **Item Attributes**. Once each OPC Data Logger item has been associated with a field in the table, the **Validate** button can be used to verify that the configuration is valid and that there are no configuration conflicts.

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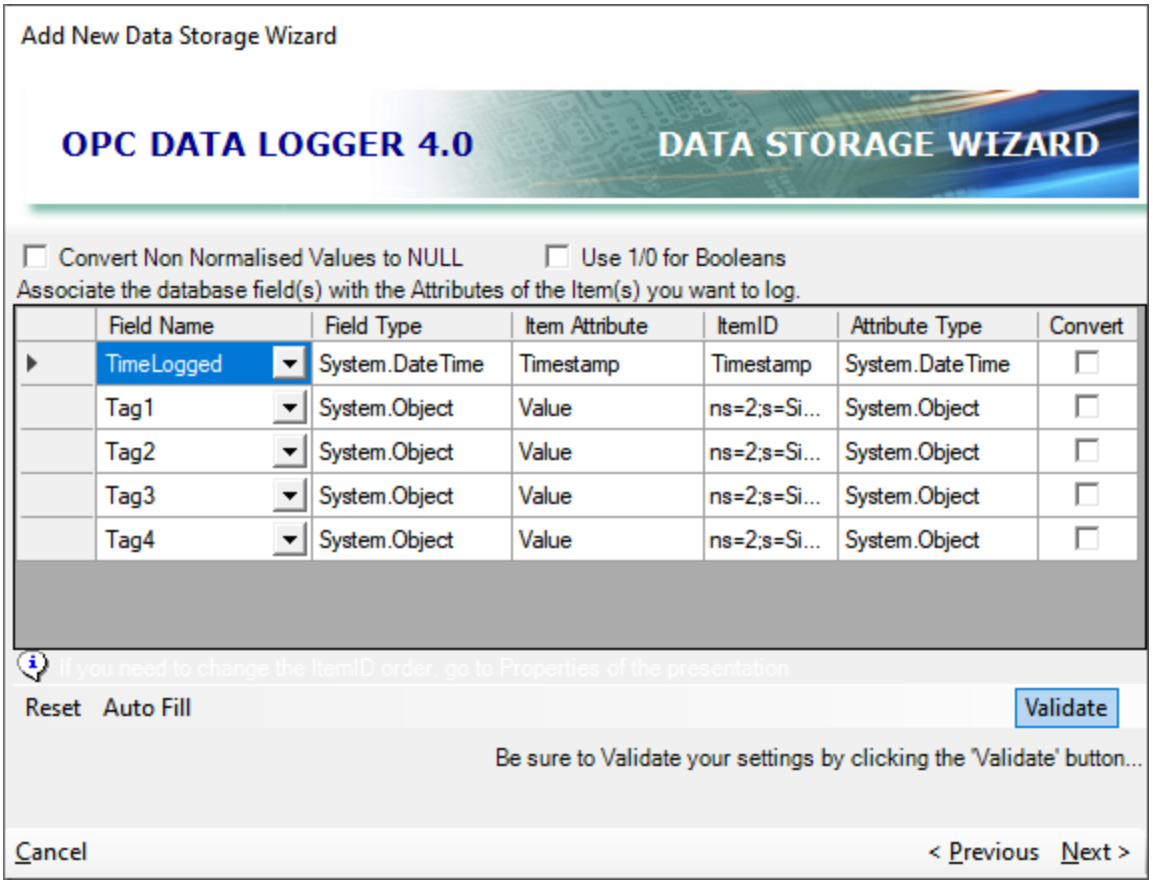

NOTE: Changing either the Presentation mode or Table for this Data Storage, will break the item mappings and requiring reconfiguration.

9. The final page of the Wizard will summarize OPC Data Logger database data storage component that will be added to the list of available Global Components when the **Finish** button is pressed.

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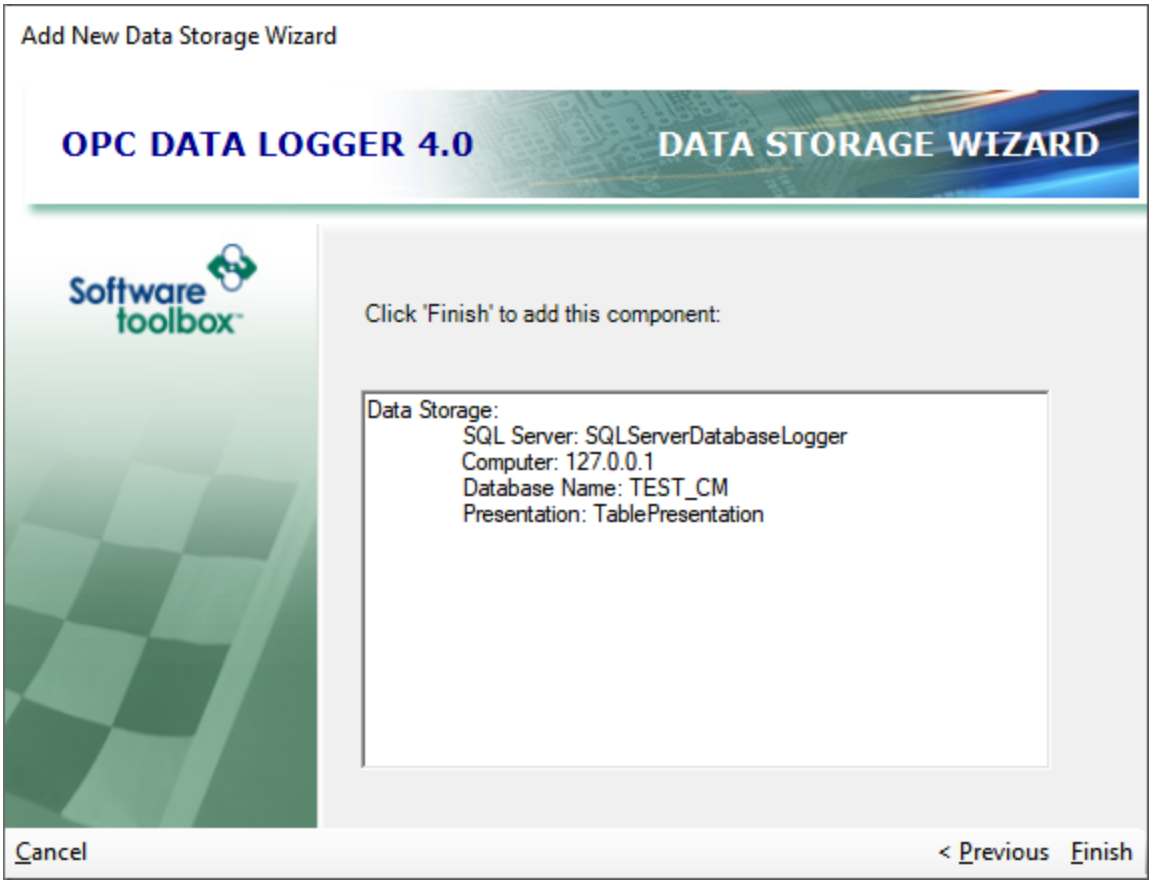

3.2.3.2 Text File Wizard

A Data Storage configures the type of logging medium to which the data will be logged. The Data Storage Wizard simplifies the configuration process, and can be accessed by right clicking on the **Data Storage** section in the tree view, and selecting **Data Storage Wizard**.

1. The first page of the Data Storage Wizard summarizes the purpose of the Wizard, and of the Data Storage.

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2. The second page of the Wizard sets the type of Data Storage that will be created – i.e. what storage medium will be logged to. If anything but **Text File** is selected in the drop down, the Database Wizard describes the configuration. The name for the Data Storage is also set here; this is how the Data Storage will appear in the OPC Data Logger tree view, and how it will appear to other Data Logger components.

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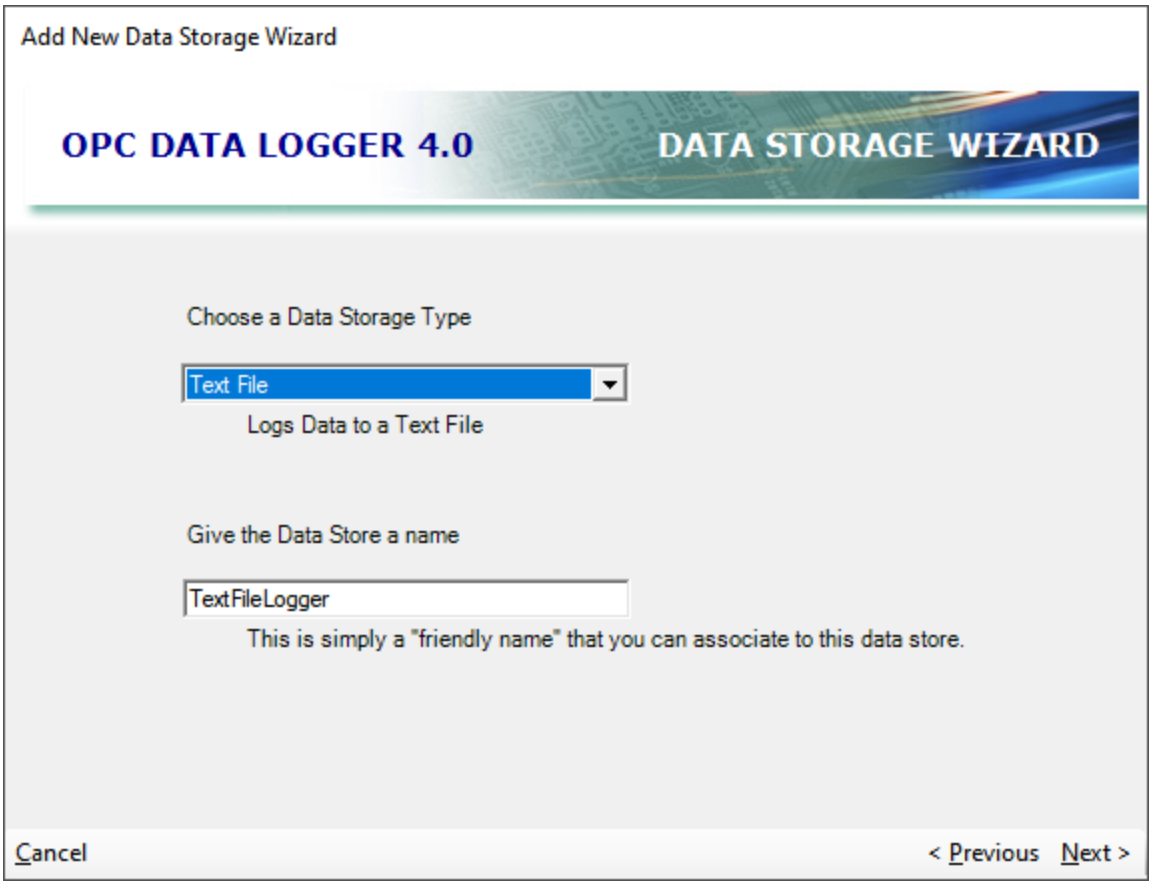

3. The third page of the Data Storage Wizard associates the Data Storage with a Data Presentation – the format with which the data is logged. If no Data Presentation exists, pressing the *New Presentation* button will bring up the Data Presentation Wizard. Each Data Storage requires an associated Data Presentation.

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4. The fourth page of the Wizard will set the file name and location. The Browse button can be used to select the directory in which the text file will be logged, or the path can be entered manually. The additional settings:

    1. **Open File in Shared Mode:** This file determines whether a file can be opened for editing while the OPC Data Logger is logging to the file. This setting should be left at the default in most situations – when this box is not checked, and the file is opened while the OPC Data Logger is still logging data, a read-only copy will be opened.

    2. **File Mode**: This setting selects whether new data will be appended to a file – if the file name exists in the chosen director – or whether the file will be overwritten every time the file is opened for logging.

    3. **Column Separator**: This drop down determines what will be used to separate data columns. This selection should be left at the default, comma, if logging to a CSV file.

    4. **Boolean 1/0**: Checking this box logs all Boolean values as 0 or 1, in place of "True" or "False"

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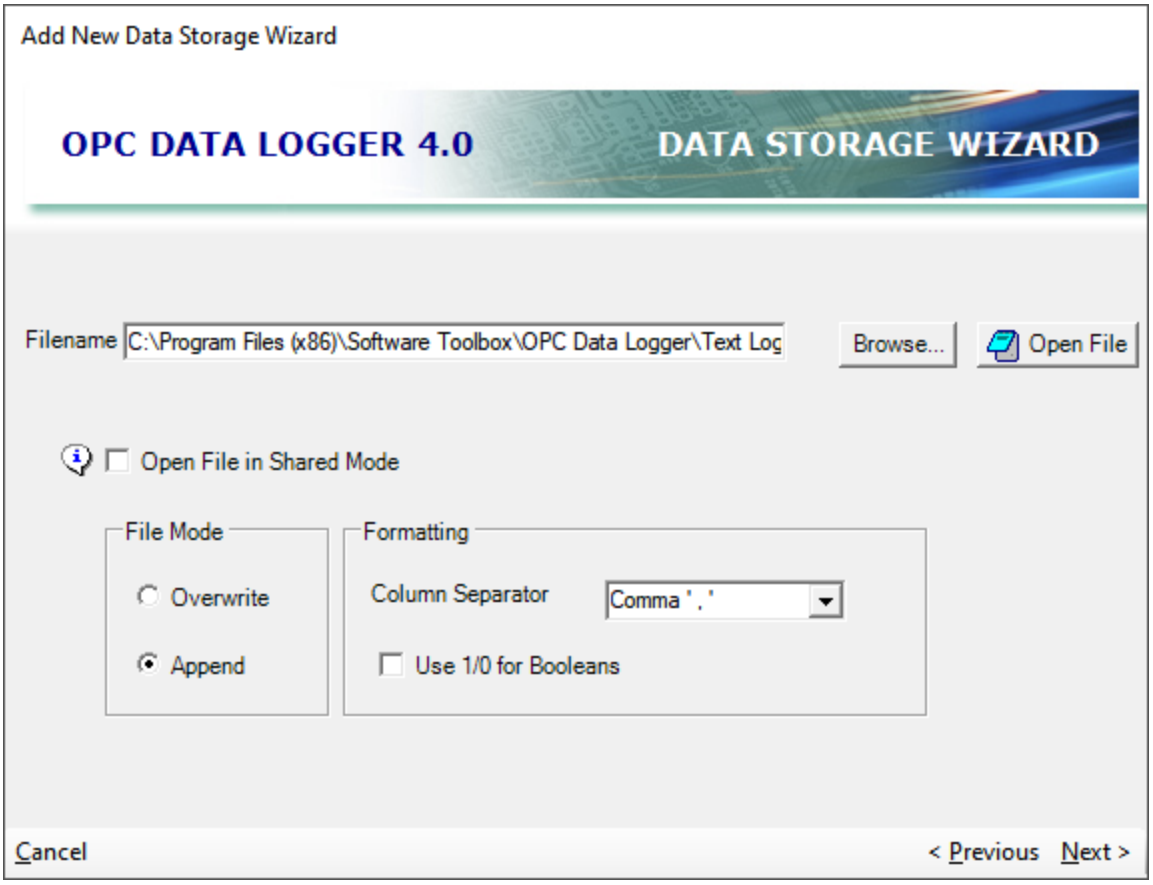
5. Must specify a **Filename** either by browsing or typing the full path. Specify if you want to enable **Shared Mode**. You must also choose a **File Mode** and a **Column Separator**. Then click **Next**.



5. The final screen of the Data Storage Wizard summarizes the configuration. Pressing finish finalizes the Text File Data Storage, and places it into the OPC Data Logger configuration tree view

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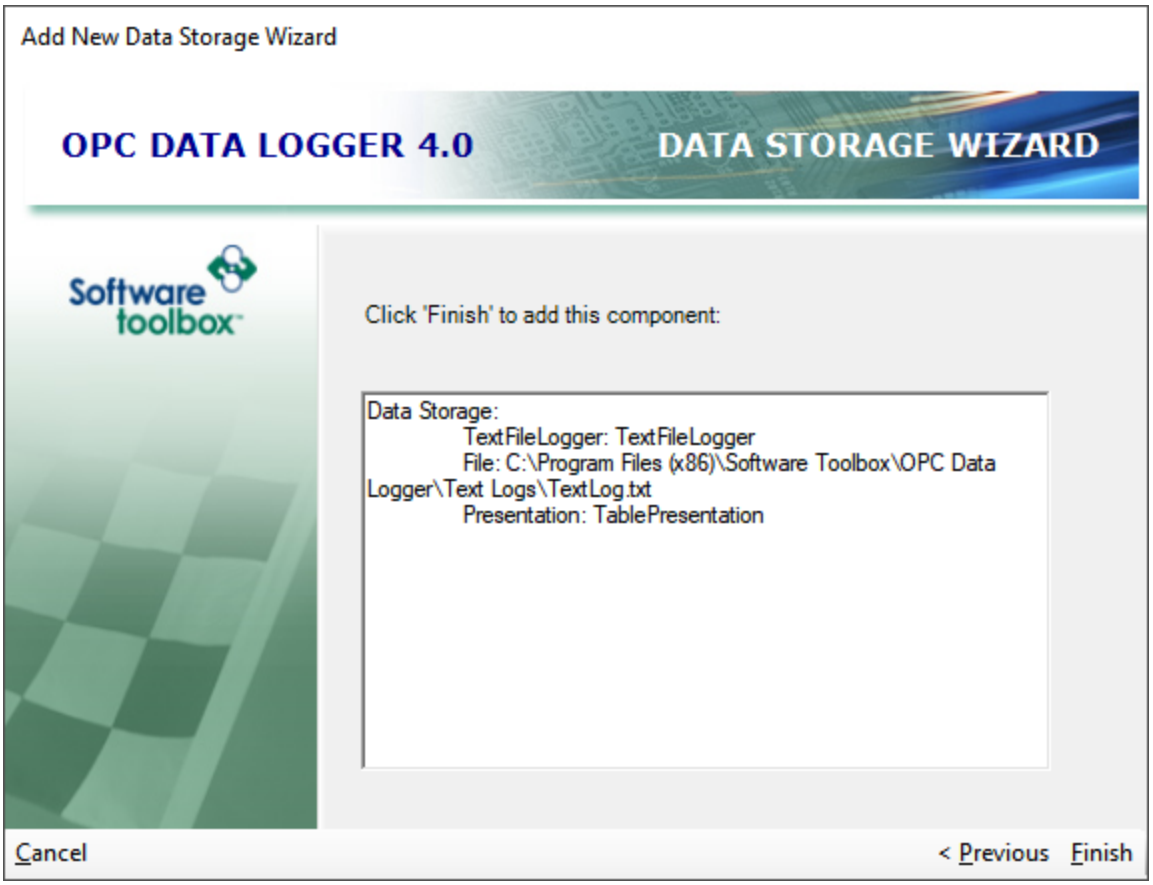

3.2.4 Logging Tasks Wizard

The Logging Task is the "container" that connects the various components of the OPC Data Logger, and acts as the interface between the Data Collector (the source of the data to be logged), the Data Storage (the destination for the data to be logged in), and holds the Groups of Tags which will be logged. The Logging Task Wizard is intended to quickly and easily add a new Logging Task to an OPC Data Logger configuration, and verify that all the necessary components are added.

Right clicking on the **Logging Tasks** entry in the OPC Data Logger tree view and selecting **Logging Task Wizard** will open the Logging Task Wizard, and add a new Logging Task to the configuration.

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1. The first page of the Logging Task Wizard summarizes the purpose of the Wizard, and provides several helpful links to sections of this help file.

2. The second page of the Logging Task Wizard sets the Task name – i.e how the Logging Task will appear in the OPC Data Logger tree view. It also provides an optional Description of the Logging Task.

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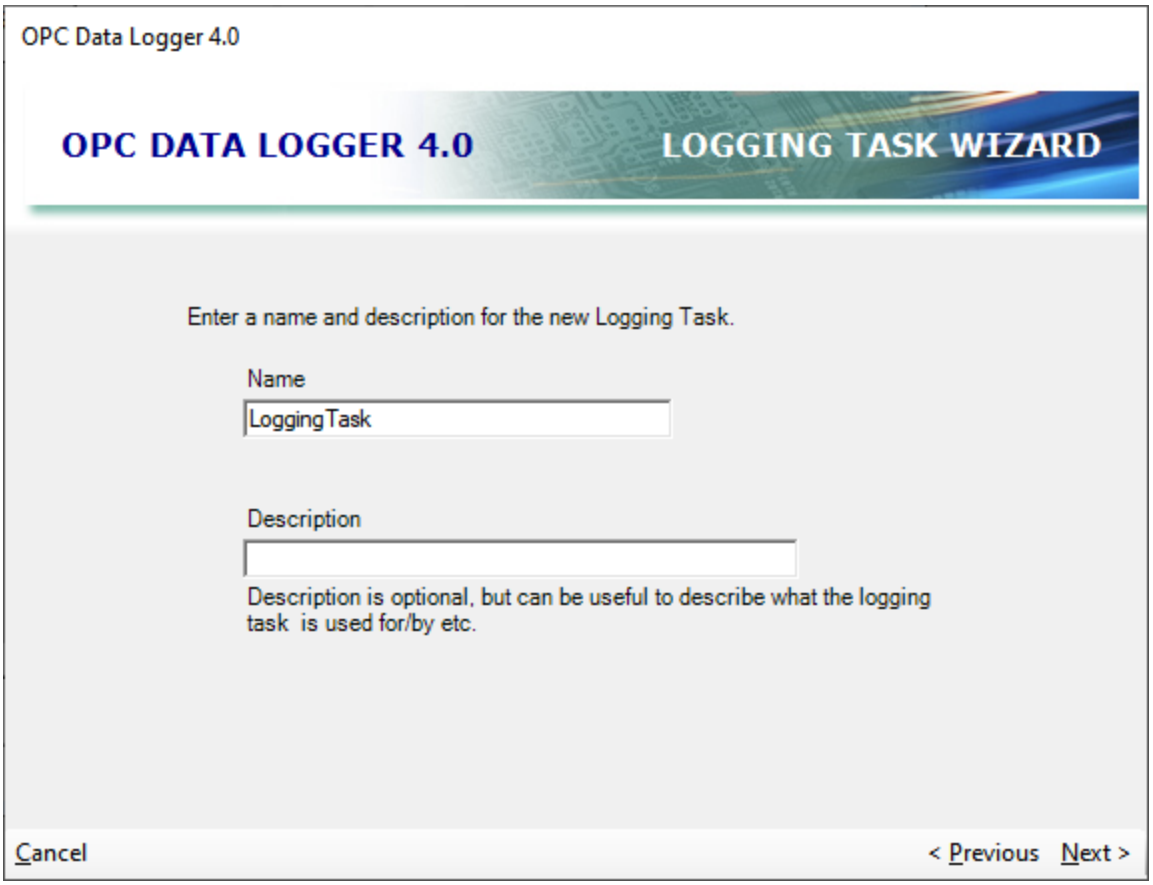

3. The third page connects the Logging Task to a data source by selecting a **Data Collector** from the dropdown menu. If no Data Collector has been configured in the OPC Data Logger configuration, clicking *New Data Collector* will bring up the Data Collector Wizard.

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4. The fourth page of the Logging Task Wizard configures which Items will be polled from the OPC Server and logged. By clicking **Add Items** a new Group will be created and the Group Wizard will be pull up. It is not necessary to add items to the Logging Task at this time in the Wizard – Items can be added at any time by adding a group to the Logging Task from the OPC Data Logger tree view.

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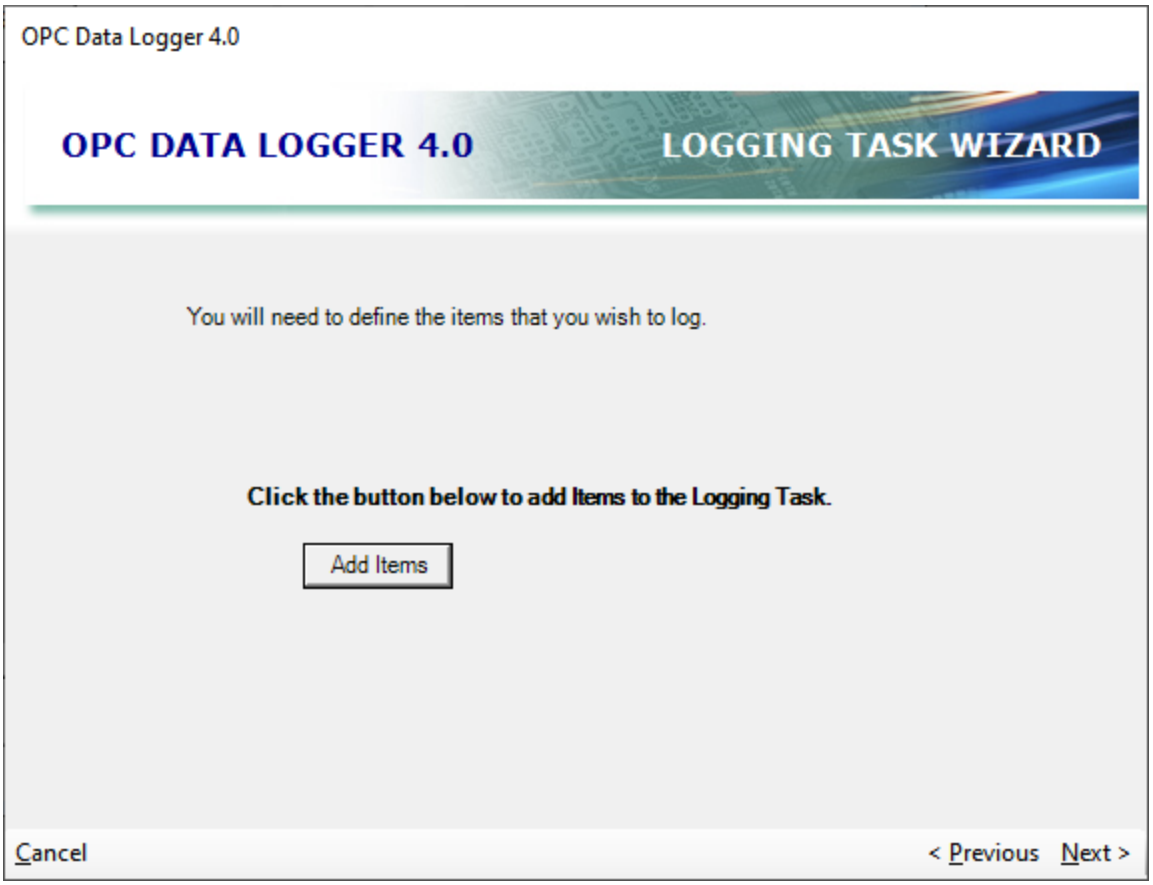

5. The fifth page of the Logging Task Wizard configures a new Data Storage if none exist. Selecting the New Data Storage button will start the Data Storage Wizard.

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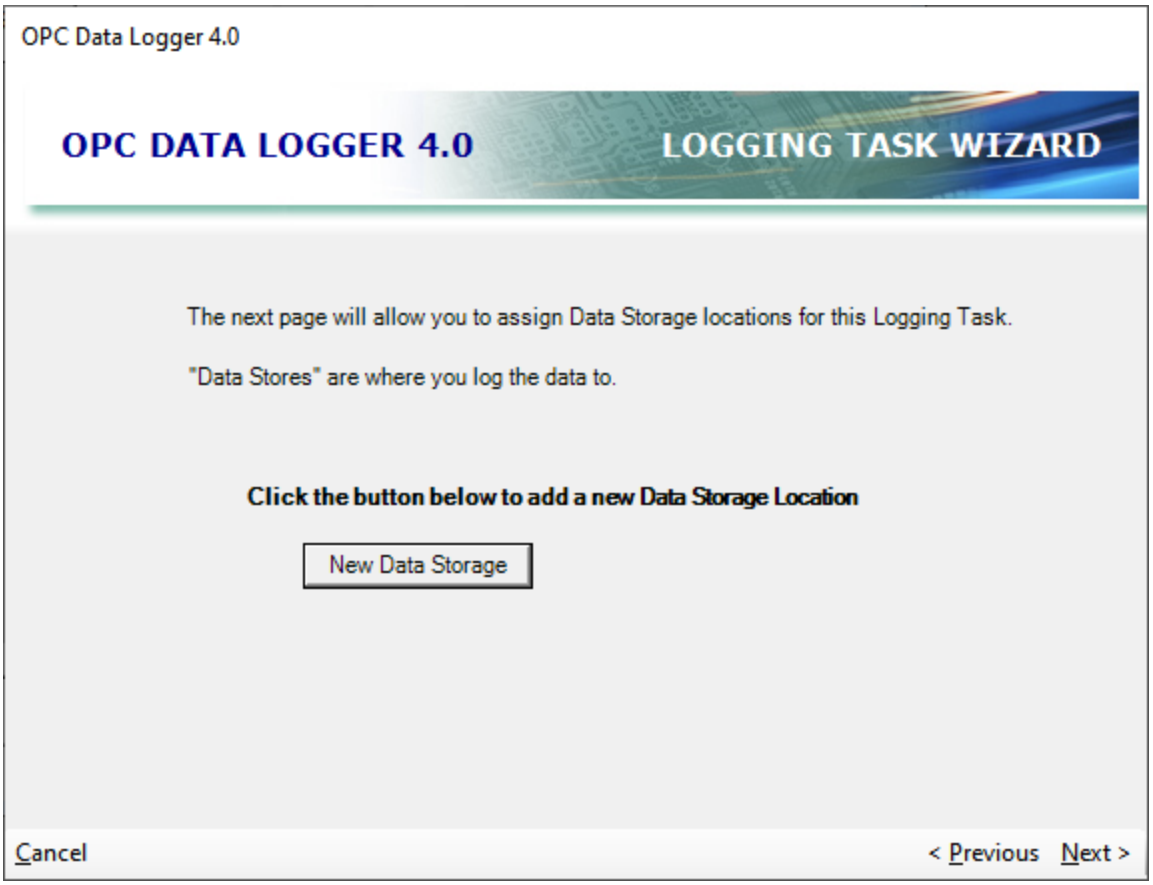

6. The sixth page of the Logging Task Wizard will associate the Logging Task with the Data storage(s) to which the data will be logged. Selecting **Add** will bring up the list of available Data Storages.

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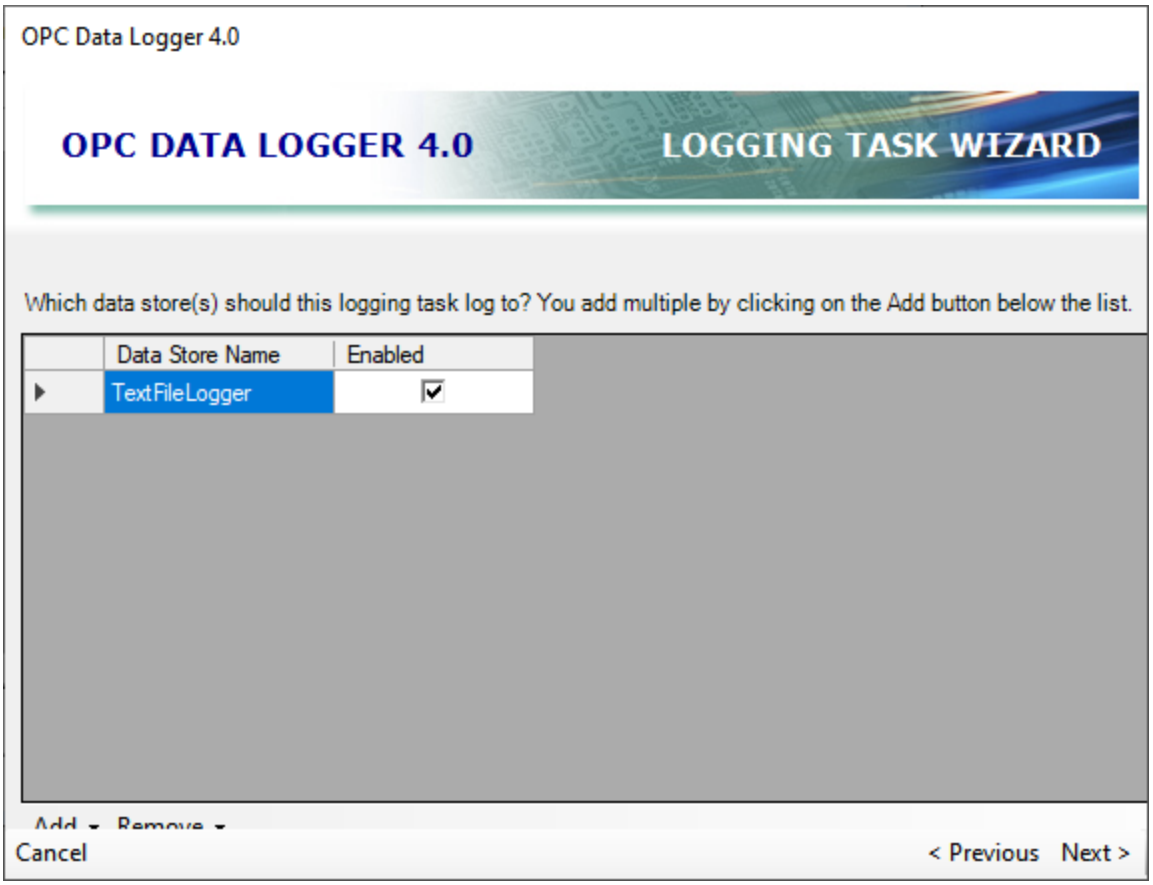

7. The final page of the Wizard summarizes the configured settings. Selecting **Finish** here will finalize the Logging Task, and add it to the OPC Data Logger tree view.

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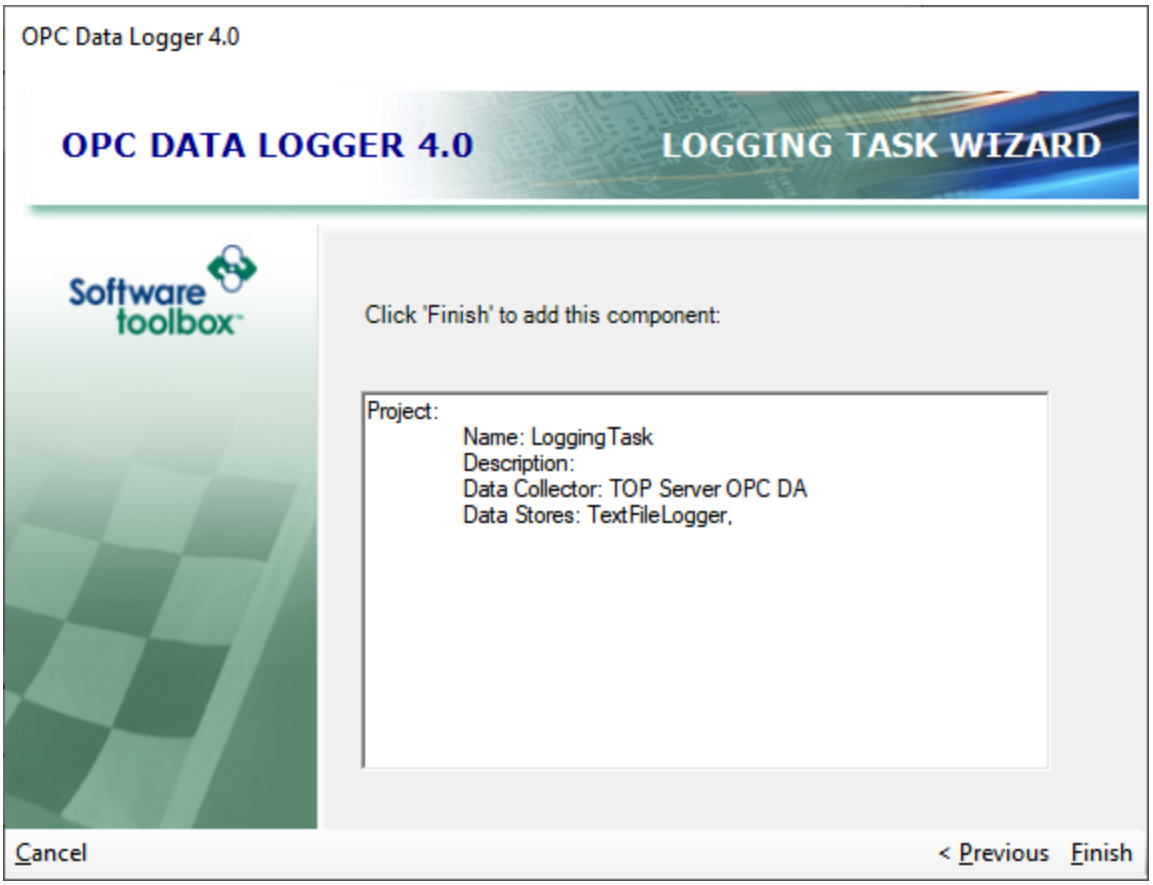

3.2.5 Group Wizard

The Group is the container that holds the items that will be read from the OPC Data Source, and determines the method with which they will be read. Groups must be configured under an existing Logging Task, and the Group Wizard can be accessed either through the Logging Task Wizard, or by right clicking on an existing Logging Task in the OPC Data Logger tree view and selecting the **Item Group Wizard.**

1. The first page of the Group Wizard will outline the steps that the Wizard will cover.

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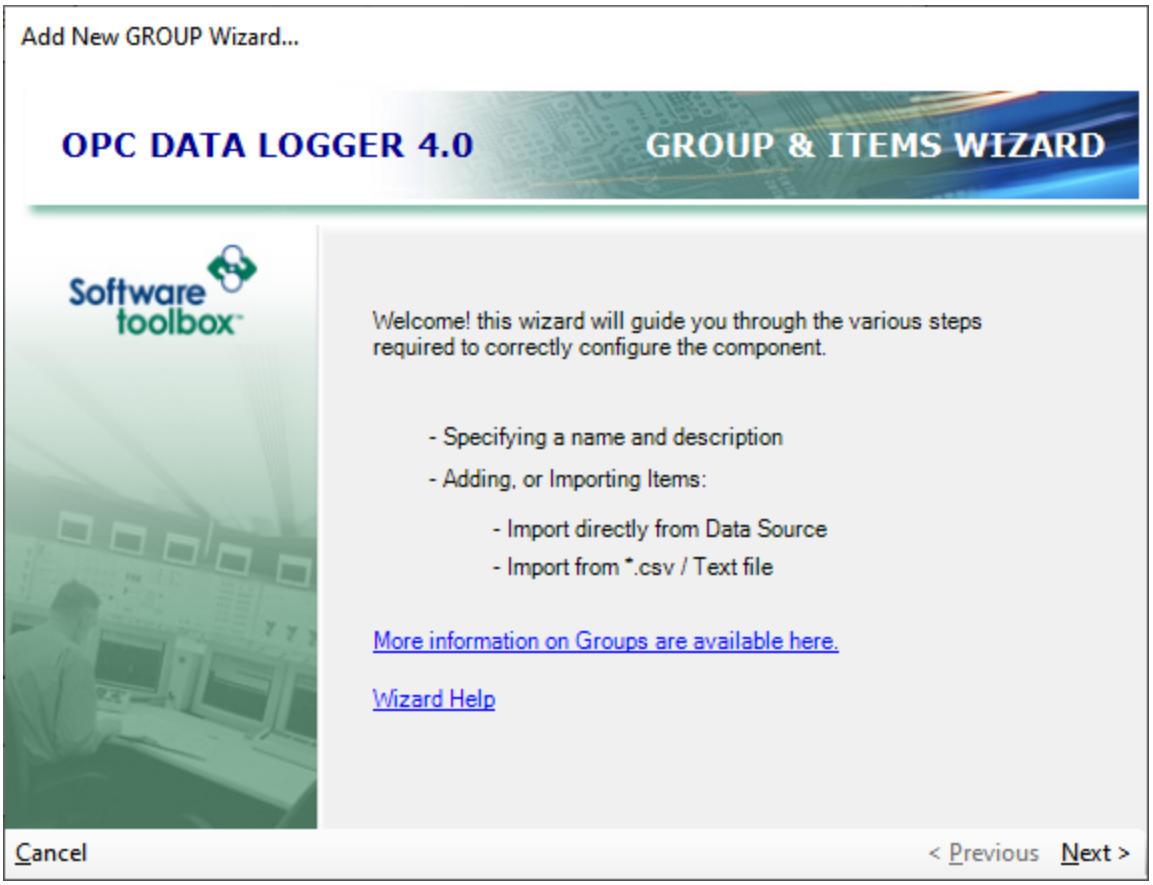

2. The second page of the Group Wizard asks for a **Group Name**, and for an optional **Description** of the Group. The Group Name will be how the Group appears in the OPC Data Logger tree view, and how other components will be able to reference the Group.

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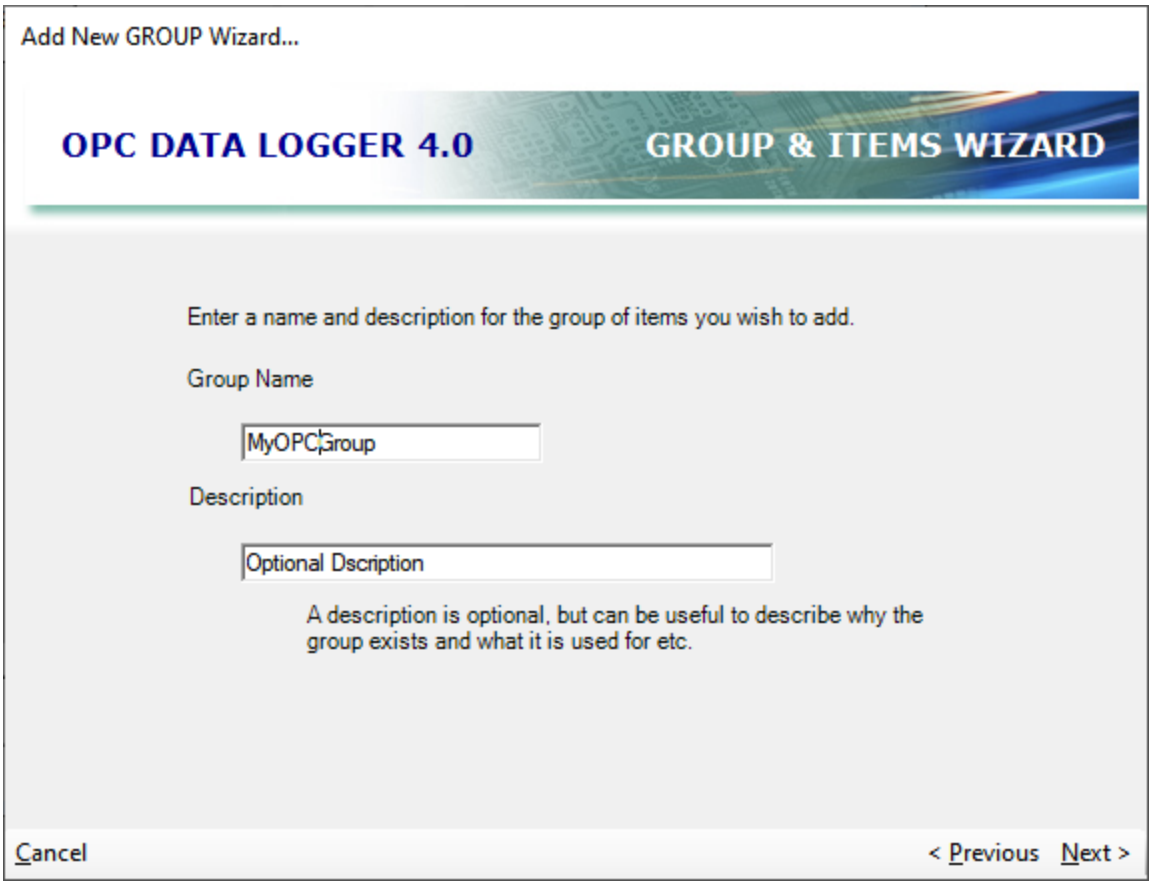

3. The third page of the Group Wizard determines the read method for the Items added to the group. The default setting, **Subscription Based Reads**, subscribes to the tags in the OPC Server with the update rate set in the Interval field – the default being 250ms. More information on the available update methods can be found in the Detailed Reference Group section of the help file.

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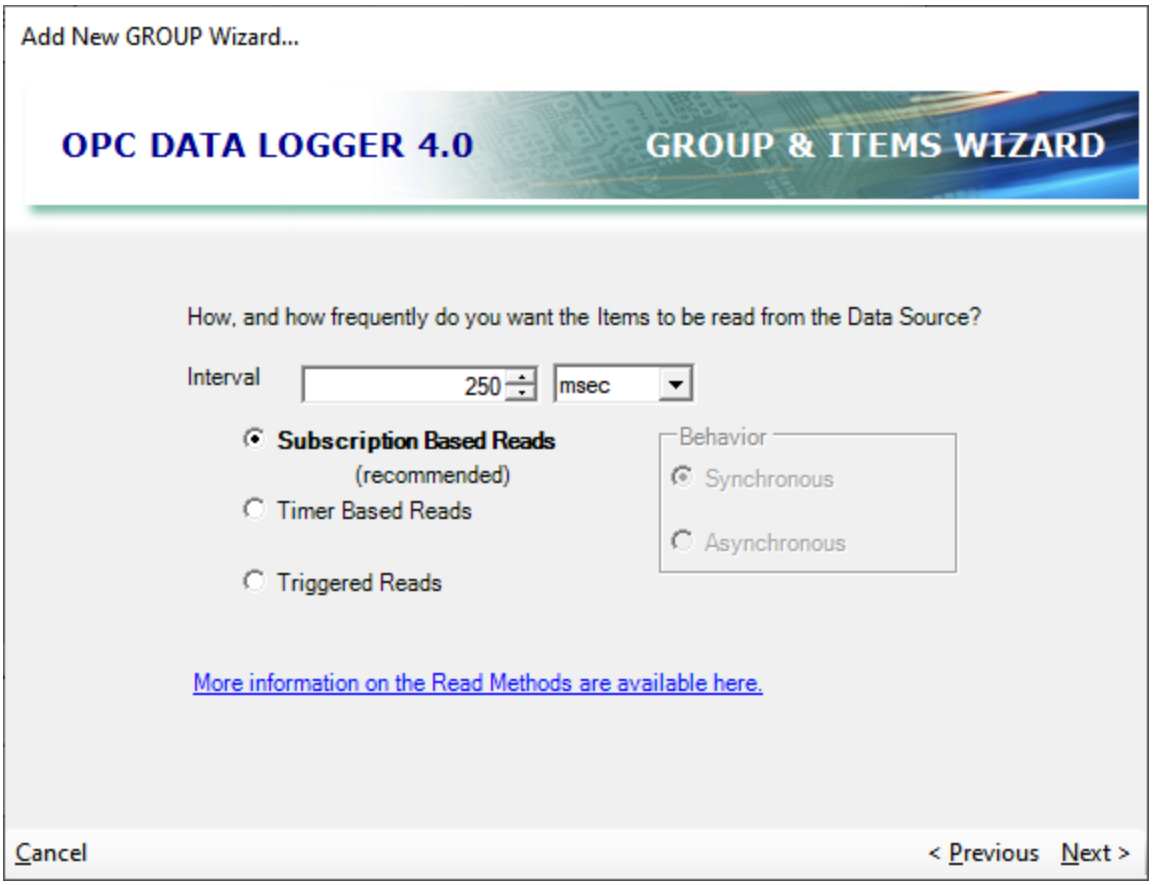

4. The fourth page of the Group Wizard sets how data tags will be added to this group. The options are to manually add items to the Group by browsing the OPC Server, to Auto Import items from the OPC Server, or to import items from a CSV file. The default setting is **Manually choose items to add**. For more information on Manually choosing items to add, Auto importing items from Data Source, or on Auto Importing items from a text file reference the corresponding sections of the help file.

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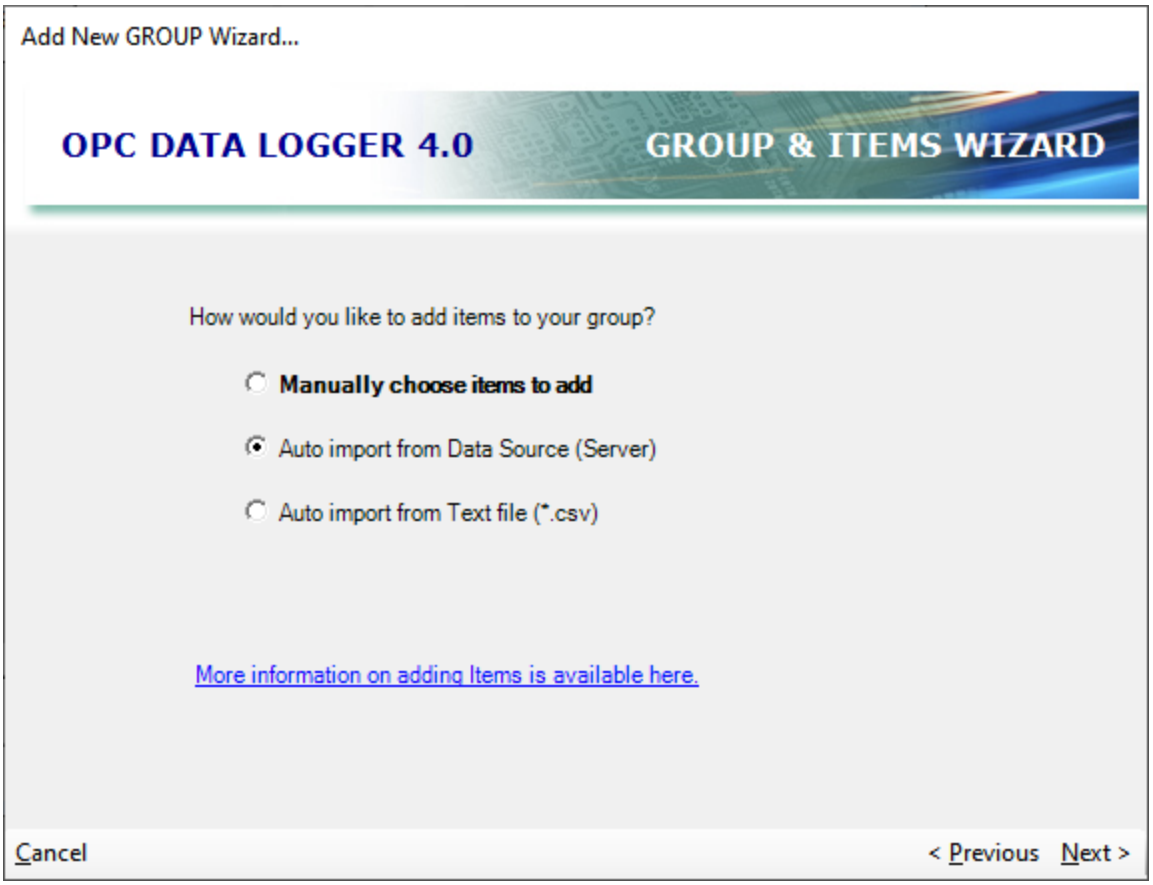

5. Once items have been added to the group, the final page of the Group Wizard will summarize the configured settings. Clicking Finish will finalize the settings and create the Group in the OPC Data Logger tree view, as a child of the Logging Task for which the group was created.

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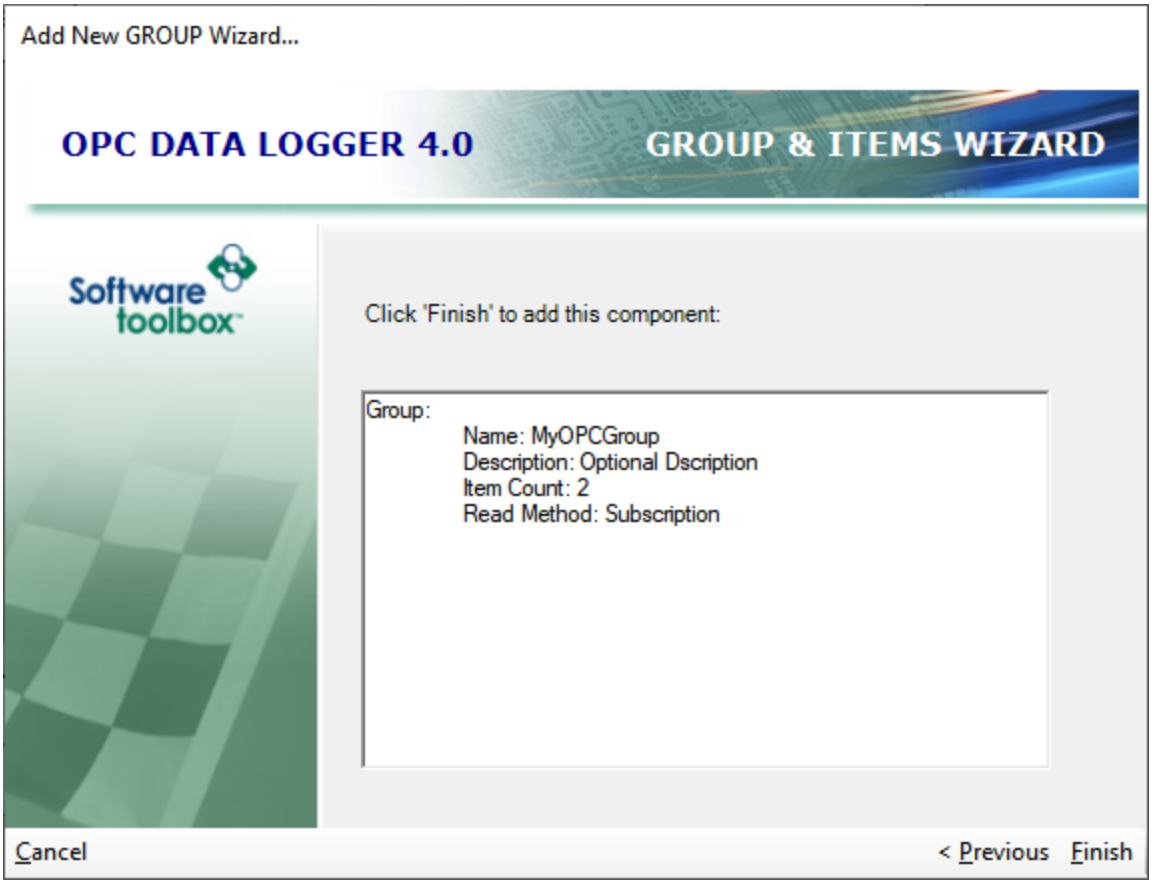

3.3 Detailed Reference

3.3.1 Data Collection

A Data Collector represents a data source and is the interface through which data will be gathered for logging. Regardless of how and where data will be logged a Data collector must be configured – this step is therefore common for all logging types.

The OPC Data Logger currently supports data collection from the following data sources

1. OPC DA

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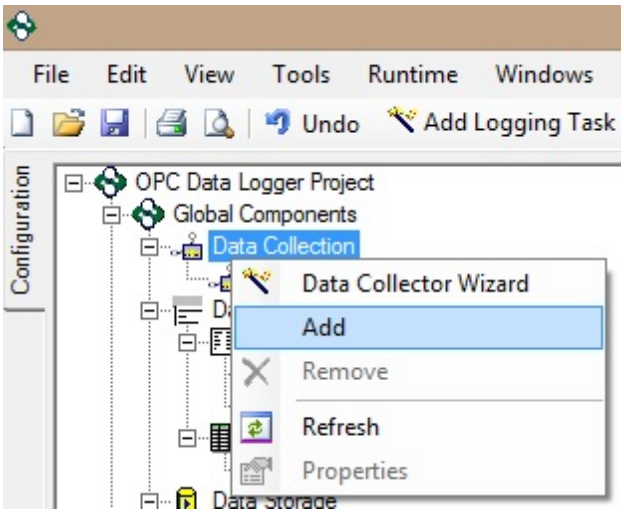
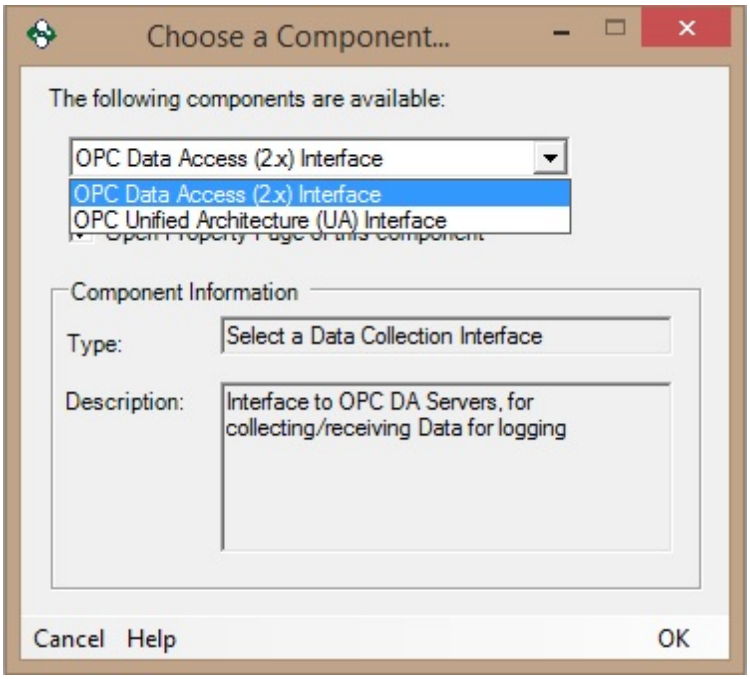
2. OPC UA

Adding a new Data Collector

1. Right clicking on the Data Collection option, under the *Global Components* will allow adding a new Data Collector.



2. The Choose a Component dialog box will determine what type of Data Collector will be added to the project.



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Checking the **Open Property Page** option will open the Data collector Properties Page automatically after adding the Collector. It is recommended to leave this box checked as it is necessary to associate the Data Collector with a specific data source, prior to use.

Depending on whether an OPC DA or OPC UA Data collector was selected, the rest of the configuration will differ.

Note: In most cases using the OPC DA Data Collector, or OPC UA Data Collector Wizard makes the process of adding a new data collector much easier, and should be used where possible.

3.3.1.1 OPC DA

The most common source of data for the OPC Data Logger is an OPC DA Server. When a OPC DA (Data Access) data collector is added to the OPC Data Logger project, the following properties can/must be set.

General Properties

- **Name**: A unique name that identifies the data collector. This will be how the Data Collector Component appears in the tree view.
- **Enabled**: When checked, the Data Collector is enabled, and can be used in a Logging Task for reading tags from an OPC DA Server.

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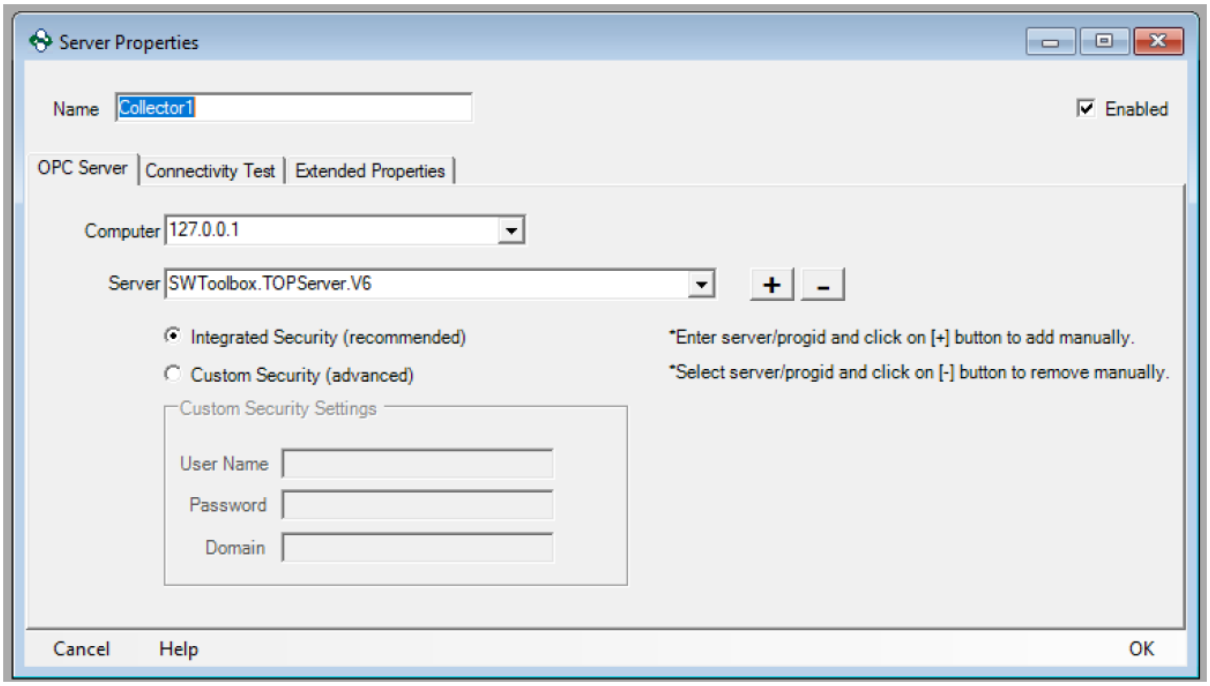

OPC Server Properties

- **Computer**: The computer name or IP address of the PC running the OPC Server. Use localhost or 127.0.0.1 for local connections.
- **Server**: The ProgID of the OPC Server that you are connecting to.
  - **Add Server/ProgID**: Enter the server ProgID and click on the + button to add server ProgID to the list manually.
  - **Remove Server/ProgID**: Enter or select ProgID and click on the - button to remove server ProgID from the list.
- **Integrated Security**: When the OPC Data Logger attempts to connect to the OPC Server, it will do so with the user credentials that the Data Logger is running under.
- **Custom Security**: Specifies a specific username, password, and (where appropriate) domain, that the OPC Data Logger will use to connect to the OPC Server

Note: The Authentication settings are particularly important when making a connection to an OPC Server running on a remote

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machine, as DCOM Security will come into play. These settings can, in most cases, be left at the default setting.

Connectivity Test

See the Connectivity Test section for more information

Extended Properties

See the Extended Properties section for more information

3.3.1.2 OPC UA

The Data Collector component configures the interface between the OPC Data Logger and the source of the data to be logged – in this case; an OPC UA Server. The settings for an OPC Unified Architecture (UA) Data Collector can be accessed by right clicking on an existing OPC UA Data Collector, and selecting **Properties**, or by right clicking on the *Data Collection* item in the tree view, clicking **Add**, and selecting the OPC Unified Architecture (UA) Interface from the drop down.

General Properties

The general OPC UA Data Collector Properties are available at the top of the Properties window and allow the configuration of:

- **Name**: The name assigns the Data Collector component a user defined name. This will also be how the Data Collector appears in the OPC Data Logger tree view, and how it will appear to other components in the configuration.
- **Enabled**: The Enabled check box determines the status of the Data Collector. If unchecked the Data Collector will be inactive, and will connect to the specified OPC UA Server.

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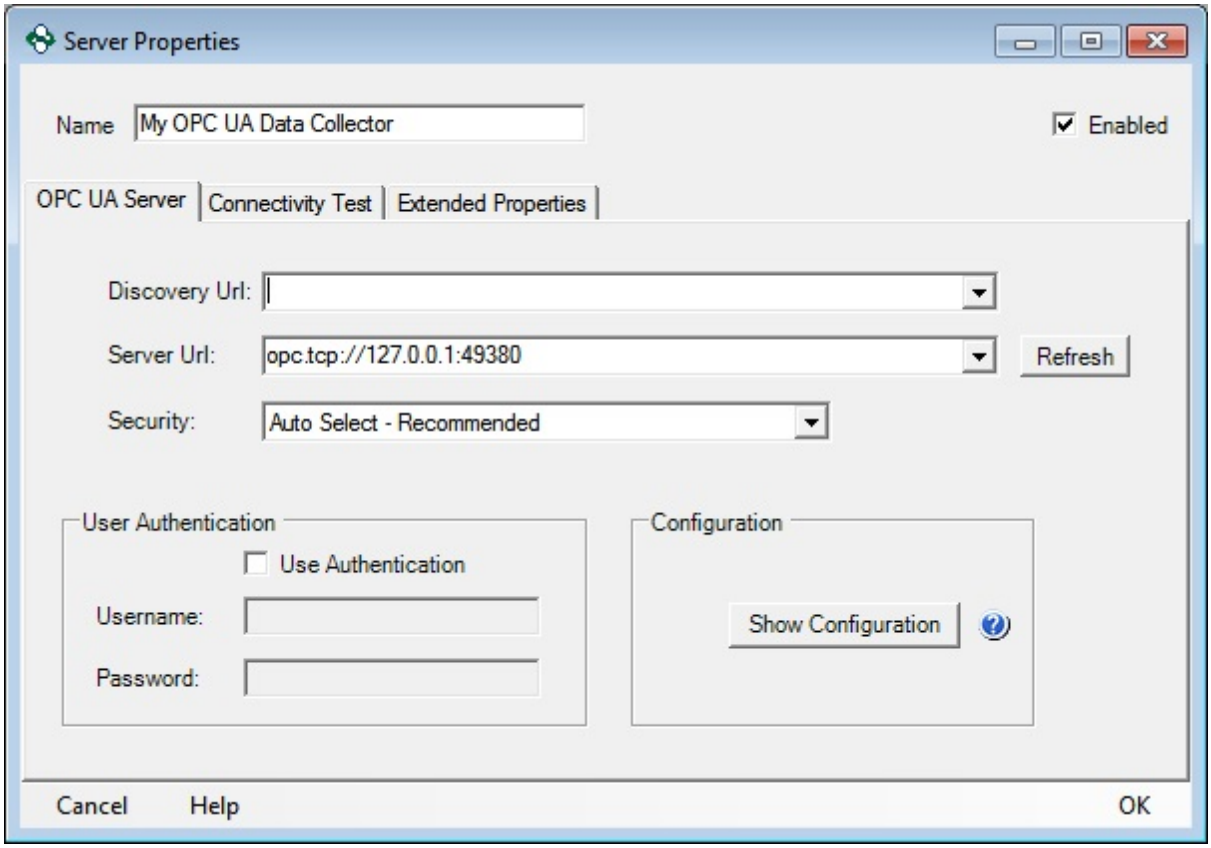

OPC UA Server Properties

1. **Discovery URL**: The Discovery URL is optional, and can be used to point to an OPC UA Discovery Service.
2. **Server URL**: The Server URL specifies the OPC UA Server Endpoint. If a Discovery Service was configured, the drop down can be used to browse for the server Endpoint.
3. **Security**: The Security setting sets the OPC UA Security Level, and must match what is configured for the server.

Note: If using a Discovery URL and changes have been made to the Server URL, or the Server Security Level, the Refresh button should be used to re-query the service for the list of available servers.

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4. **User Authentication**: If the OPC UA Server requires credentials, the Use Authentication checkbox will allow the configuration of a Username and Password to be used when connecting to the Server.
5. **Configuration**: The *Show Configuration* button can be used to manage OPC UA Certificates, if the connection between the OPC Data Logger and the OPC UA Server will be certificate based. This button will launch the OPC UA Configuration Options Dialog

Connectivity Test

See the Connectivity Test section for more information

Extended Properties

There are not currently any Extended Properties supported for OPC UA Data Collectors.

3.3.1.2.1 OPC UA Configuration - Certificate Exchange

The OPC UA Configuration allows for certificate exchange between an OPC UA Server, and the OPC Data Logger.

Trusted Server

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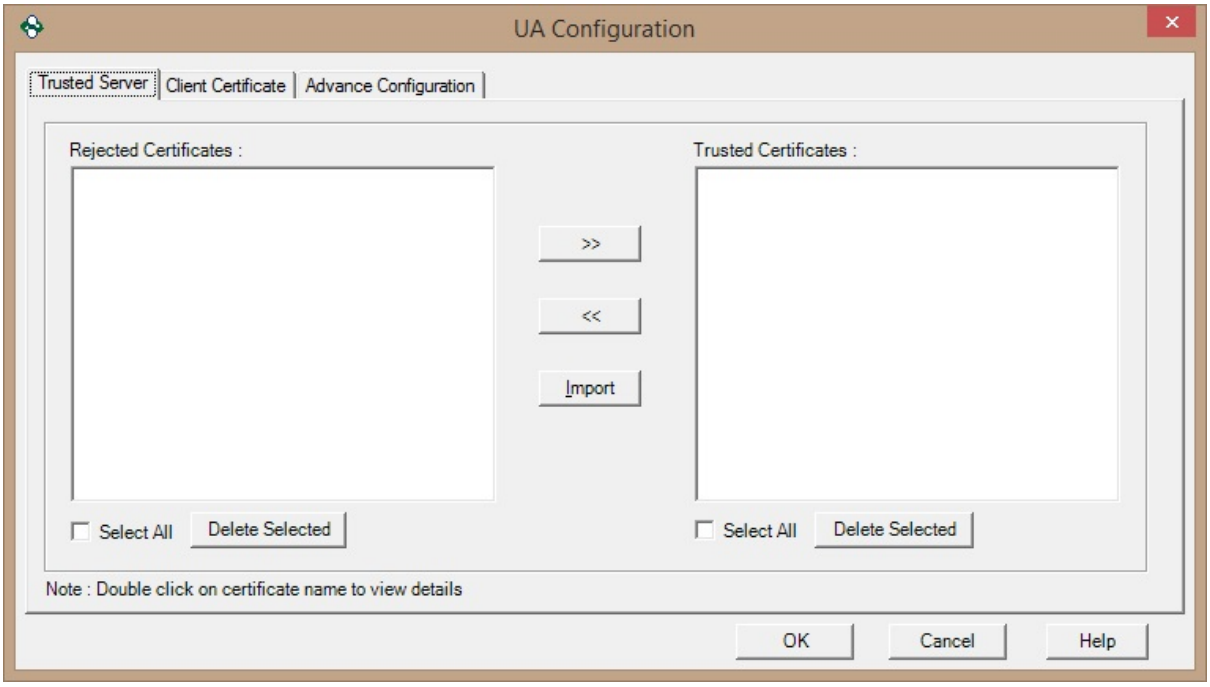

- **Rejected Certificates**: This box lists the UA Server certificates that have not been validated by the OPC Data Logger. A certificate can be transferred from the Rejected Certificates list to the Trusted Certificates list by selecting the certificate, and using the >> button to transfer the certificate.

  Note: The Rejected Certificates are also stored in a folder located at C:\Documents and Settings\All Users\Application Data\Software Toolbox\RejectedCertificates. The Application Data folder is a hidden folder, so if you do not see it make sure you change to folder options to show all hidden files and folders.

- **Trusted Certificates**: This box lists the UA Server certificates that have been validated by the OPC Data Logger. A certificate can be transferred from the Trusted Certificates list to the Rejected Certificates list by selecting the certificate, and using the << button to transfer the certificate.

Note: The Rejected and Accepted Certificates are also stored in directories, the location depends on the operating system:

Windows XP:

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C:\Documents and Settings\All Users\Application Data\Software Toolbox\

Windows 7 and Newer:

C:\Program Data\Software Toolbox\OPC Datalogger\

- **Import**: The import button will browse the machine for any server certificates. These will be added to the list of Trusted Certificates if selected.
- **Delete Selected**: Deletes all of the selected Certificates in the respective Rejected or Trusted Certificates lists.

Note: The details for any certificate can be seen by double clicking on the desired certificate.

Client Certificate

- **Create New Certificate**: Checking the Create New Certificate Checkbox enables the New Certificate fields, and allows configuration of a new OPC UA Client Certificate:
  - **Number of Months**: The number of months for which the OPC UA Client certificate should be issued. The default is 120 months (10 years), and if left blank the default value will be used.
  - **Organization**: The name of the company or organization in whose name the client certificate should be created.
  - **Location**: The city in which the company or organization is located.
  - **Unit**: The Unit number/ Street Number at which the company or organization is located.
  - **State**: The State in which the company or organization is located.
  - **Country**: The Country in which the company or organization is located.
  - **Create Now**: The *Create Now* button will create a new OPC UA Client Certificate, using the *New Certificate Fields* described above.

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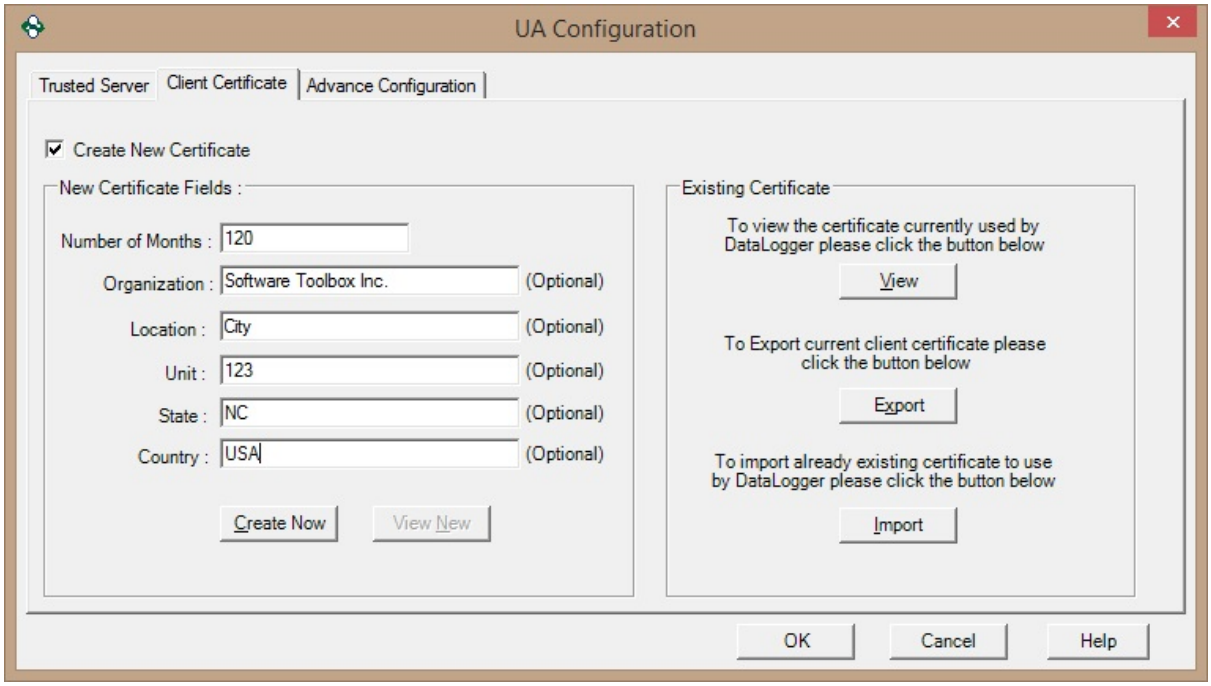
Note: The new certificate will not be set as the current OPC Data Logger certificate until the OK button is used to exit the UA Configuration window.

- **View New**: The *View New* button is set active when a new OPC UA Client Certificate is created, and displays the newly created certificate.



- Existing Certificate
  - **View**: The View button will pull up the OPC UA Client Certificate that is currently being used by the OPC Data Logger, and display it.
  - **Export**: The Export button will export the current OPC UA Client Certificate being used.
  - **Import**: The Import button will import an existing OPC UA Client Certificate to be used by the OPC Data Logger.

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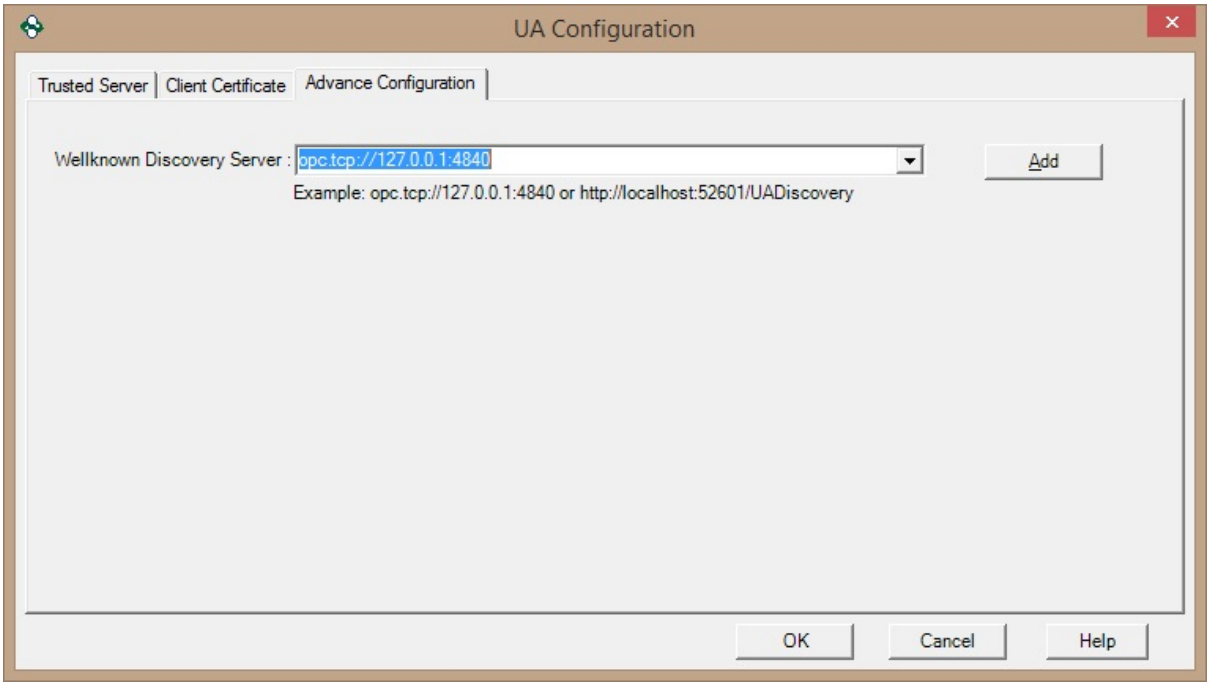
Advance Configuration

- **Wellknown Discovery Server**: This drop down will browse for existing discovery services, and add them to the list of Discovery URLs available in the OPC UA Data Collector Wizard. Alternatively an URL can be manually entered and added.



3.3.1.2.2 OPC UA Certificates

OPC UA Client and Server Certificate Exchange

The first time when trying to connect an OPC UA client, such as the OPC Data Logger, to an OPC UA server, a certificate exchange must take place in order for the two applications to be able to connect and share data. The OPC UA server must have the OPC UA client's certificate, and the UA client must possess and validate the UA server's certificate. The exact behavior of the certificate exchange will vary between servers. The server will either:

- Proceed with the certificate exchange and add it to its trusted store

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- Proceed with the certificate exchange, but not accept the certificate and place it in its accepted store
- Ignore the attempt to connect, until you manually exchange the certificates

Please refer to the OPC UA Server's documentation for information on how to proceed with the certificate exchange.

If the server allows the certificate exchange to take place automatically you will follow the steps listed below:

1. A dialog box will appear asking if the certificate should be trusted.
2. Click 'Yes' to accept the certificate. Then a prompt will ask to close the OPC Data Logger configuration for changes to take effect. Click OK and then close and reopen the Configuration.
3. If a connection can still not be made to the UA server to import or browse items, open the OPC UA Configuration dialog by going to Tools | UA Options | Configuration from the OPC Data Logger Configuration window. In the UA Configuration dialog, confirm that the OPC UA server's certificate is listed in the Trusted Certificates window. If the certificate is located in the Rejected Certificates window, highlight the server name and click on the >> button to move it to the Trusted Certificates list.
4. As mentioned above, the OPC UA server must also accept the Data Logger's certificate. If you are still having trouble connecting, confirm in your OPC UA server's configuration that it has accepted the OPC Data Logger Client certificate, and placed it in its Trusted Store. Please refer to the specific server's documentation if further assistance is needed with accepting the Client Certificate.

Creating a new OPC Data Logger UA Client Certificate

The OPC Data Logger is installed with a default Client Certificate. It is possible to create a custom Certificate that will be used to register with the UA Server. The Data Logger client certificate can be accessed by opening the Data Logger Configuration interface and going to Tools | UA Options | Configuration and then clicking on the Client Certificate tab.

To create a new certificate click on the Create New Certificate checkbox. This will enable the New Certificate Fields. The location can be specified as well include information to designate a particular organization and address. Once the fields are set as desired, click on the 'Create Now' button. Click OK to exit the dialog and set it as the default Client Certificate to be exchanged when connecting to a UA server.

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For more information on each of the properties in the New Certificate Fields, please refer to the section on UA Options Configuration.

Managing Your Certificates

The OPC Data Logger certificates can be viewed by going to Tools | UA Options | Configuration in the OPC Data Logger Configuration menu.

Click on the 'view' tab to view the details of the OPC Data Logger's client certificate.

To export this certificae click on the 'export' button and specify a path to save the certificate.

To use an exisiting certificate click on the 'import' button and browse to where the certificate is stored.

3.3.1.3 Connectivity Test

The OPC Data Logger Connectivity Test allows for a combination of tests to be configured to ensure the Data Logger and OPC Server are communicating properly

Interoperability Test Settings

The OPC Data Logger Connectivity Tests can be configured by opening an OPC DA Data Collector component properties, navigating to the Connectivity Test section, and adding various tests to the Interoperability Test Settings tab. The test is not limited to a single job, any tests that are added to the list of Jobs will be executed in sequence once the test is started, and the results will be output to the Diagnostics Tab.

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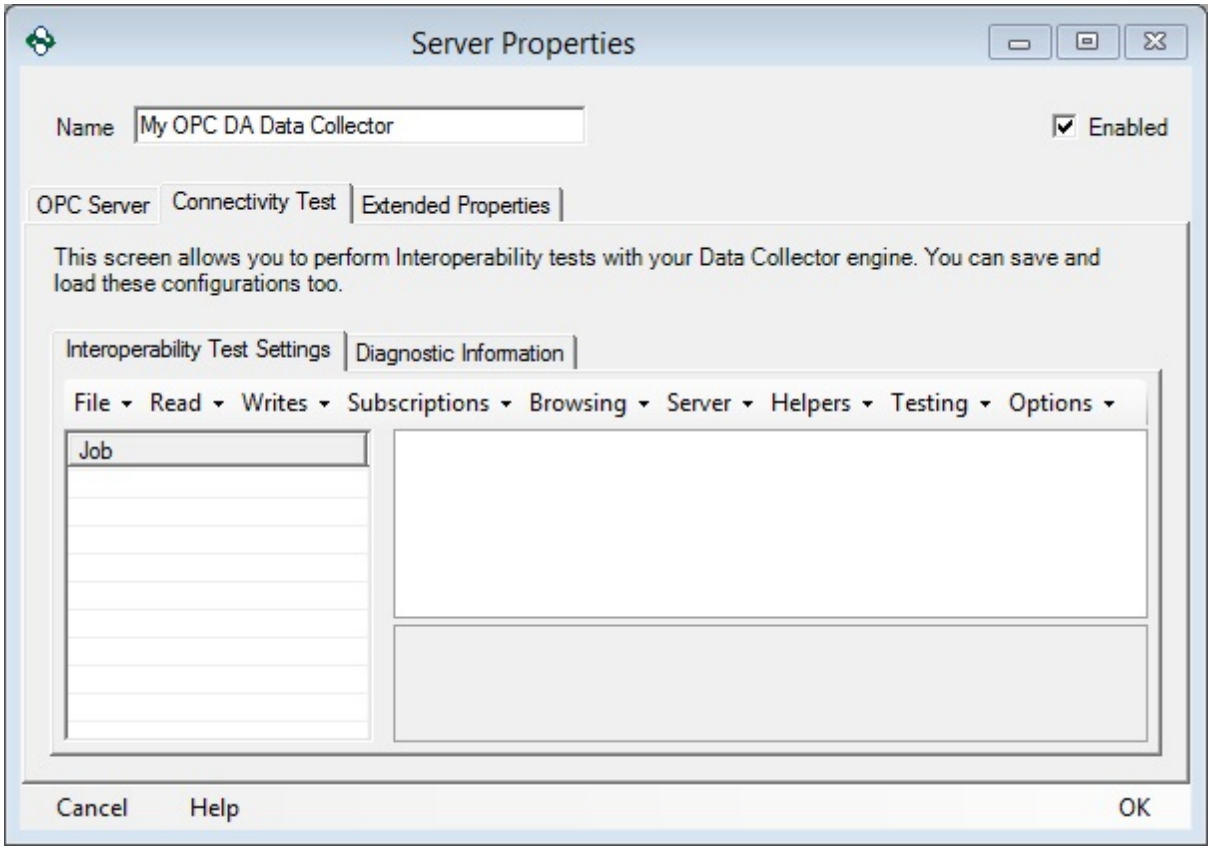

A number of tabs are available to configure a series of tests:

File Tab

Once a Connectivity test has been configured, closing the Data Collector properties page will reset the configured test(s). The File drop down allows for:

- **New** – Discards the currently configured Compatibility test(s) and rests the form.
- **Open** – Opens a previously saved Compatibility test
- **Save** – Saves any changes to a previously opened Compatibility test
- **Save as** – Saves a new Compatibility test, or saves a previously opened test with a new name

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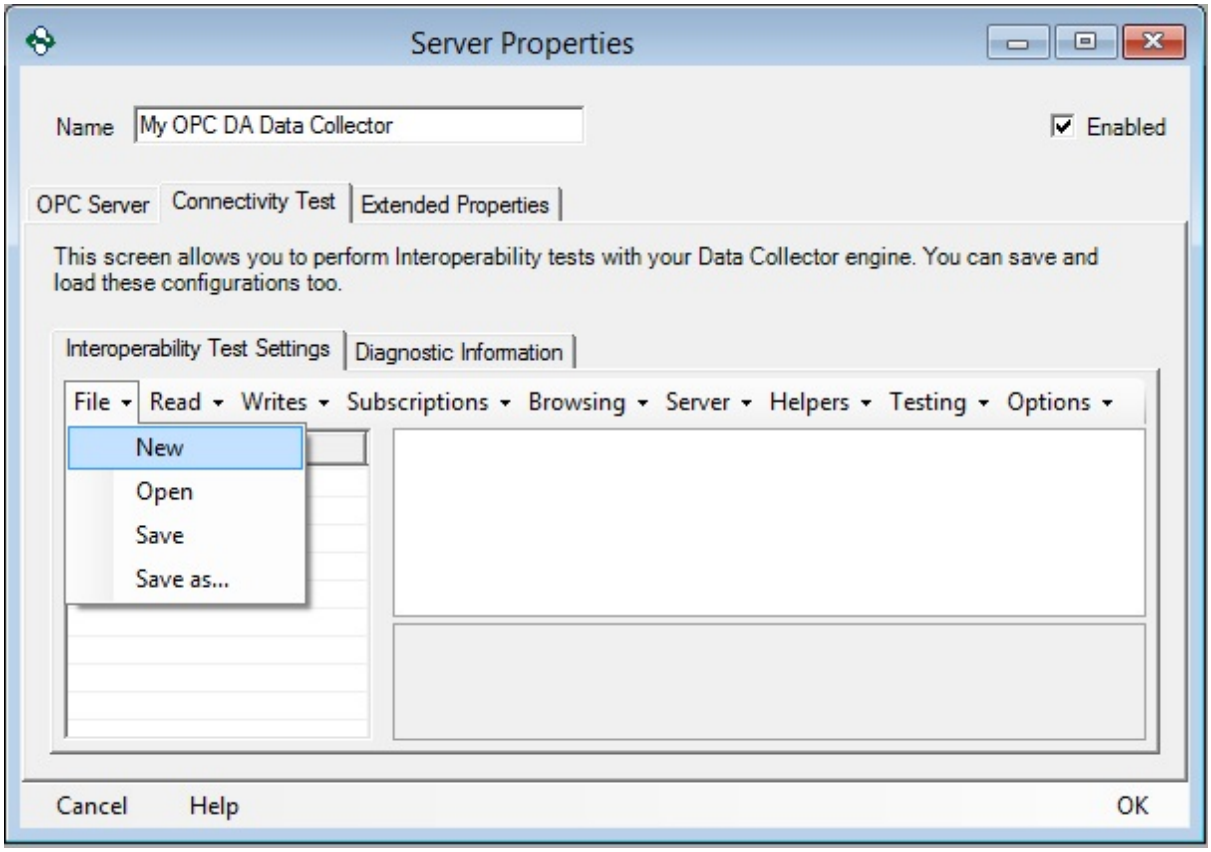

Read Tab

The Read drop down allows configuring a number of tests that will verify that tags can be successfully read from the OPC DA Server

- **Single** – Will specify a single item to be read from the OPC Server
- **Array** – Will specify a single array to be read from the OPC Server
- **Multiple** - Will specify a number of items to be read from the OPC Server
- **Single Read Loop** – Will read a single Item from the OPC Server at a specified interval

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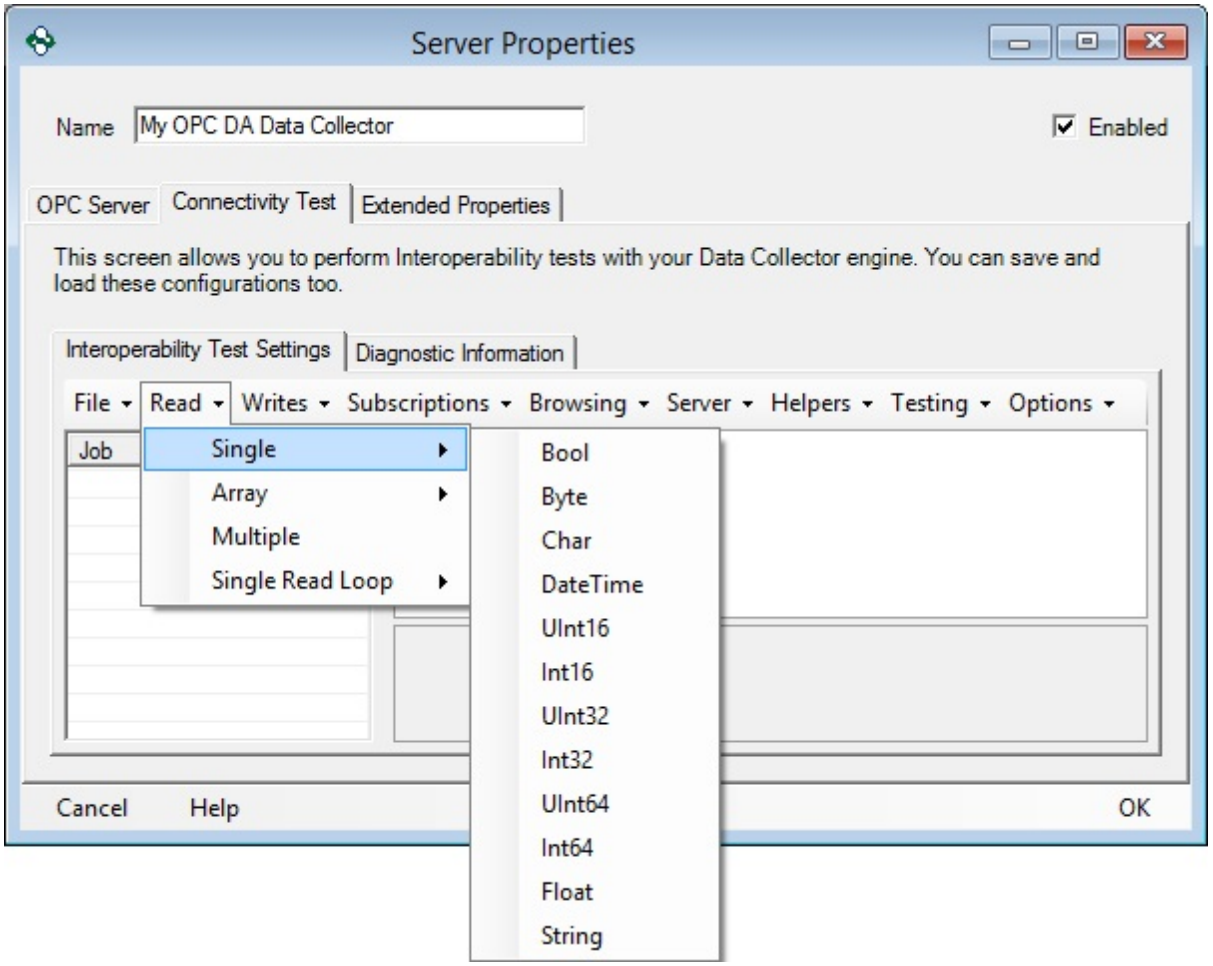

After the Read type has been selected, the Read must be configured:

- **Description** – A description of the test. This field is not user configurable
- **Enabled** – When set to *True* this test will be enabled, and will be executed.
- **ItemName** – Specifies the Item to be read from the OPC Server. This field expects a fully defined path in the OPC Server
- **SyncIO** – When set to True a synchronous read will be performed, when *False* an asynchronous read will be performed.
- **ToDevice** – Specifies whether the read will be to the Device (*True*), or the server cache (*False*).

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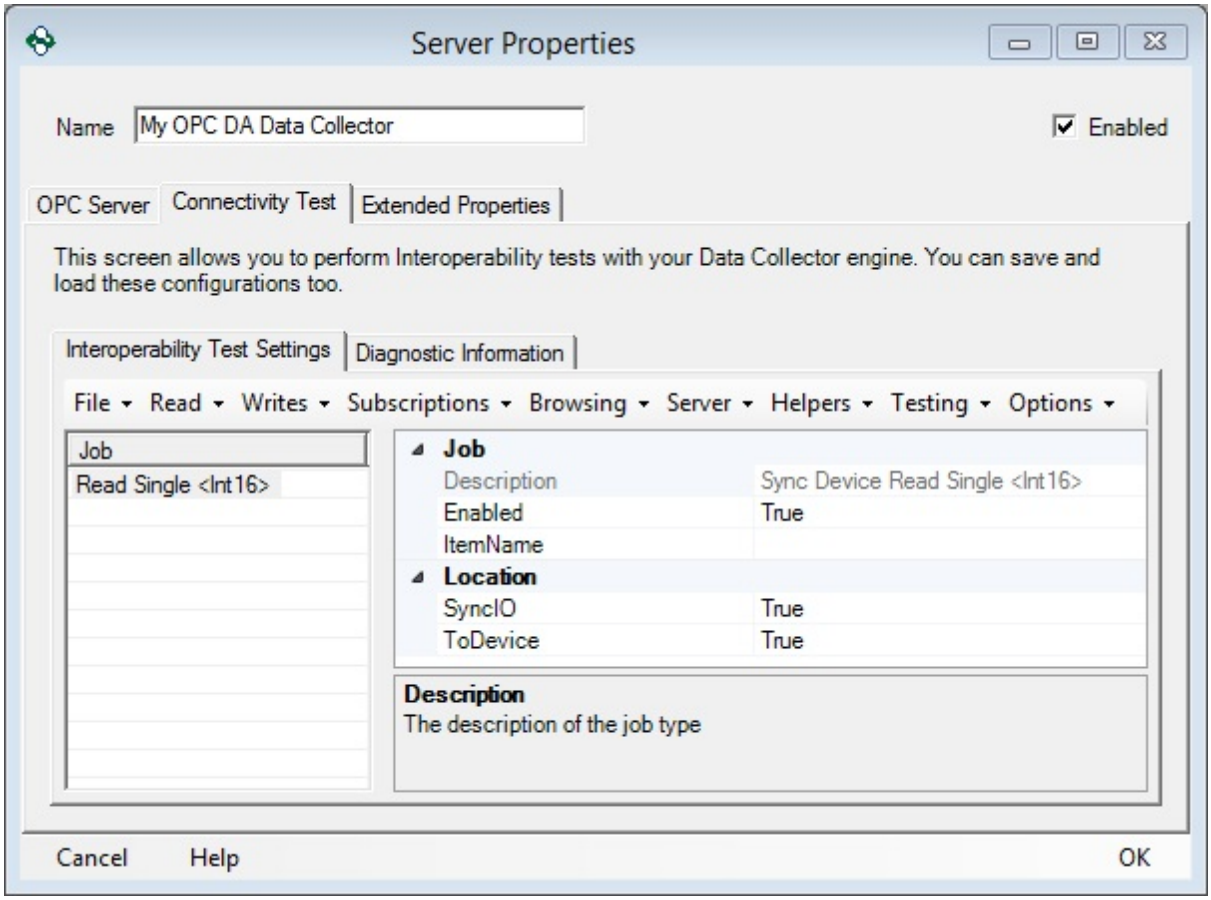

Write Tab

The Write drop down allows configuring a number of test that will verify that tags can be successfully written to the OPC DA Server

- **Single** – Will specify a single item to be written to in the OPC Server
- **Array** – Will specify a single array to be written to in the OPC Server
- **Multiple** - Will specify a number of items to be written to in the OPC Server
- **Single Read Loop** – Will write to a single Item in the OPC Server at a specified interval

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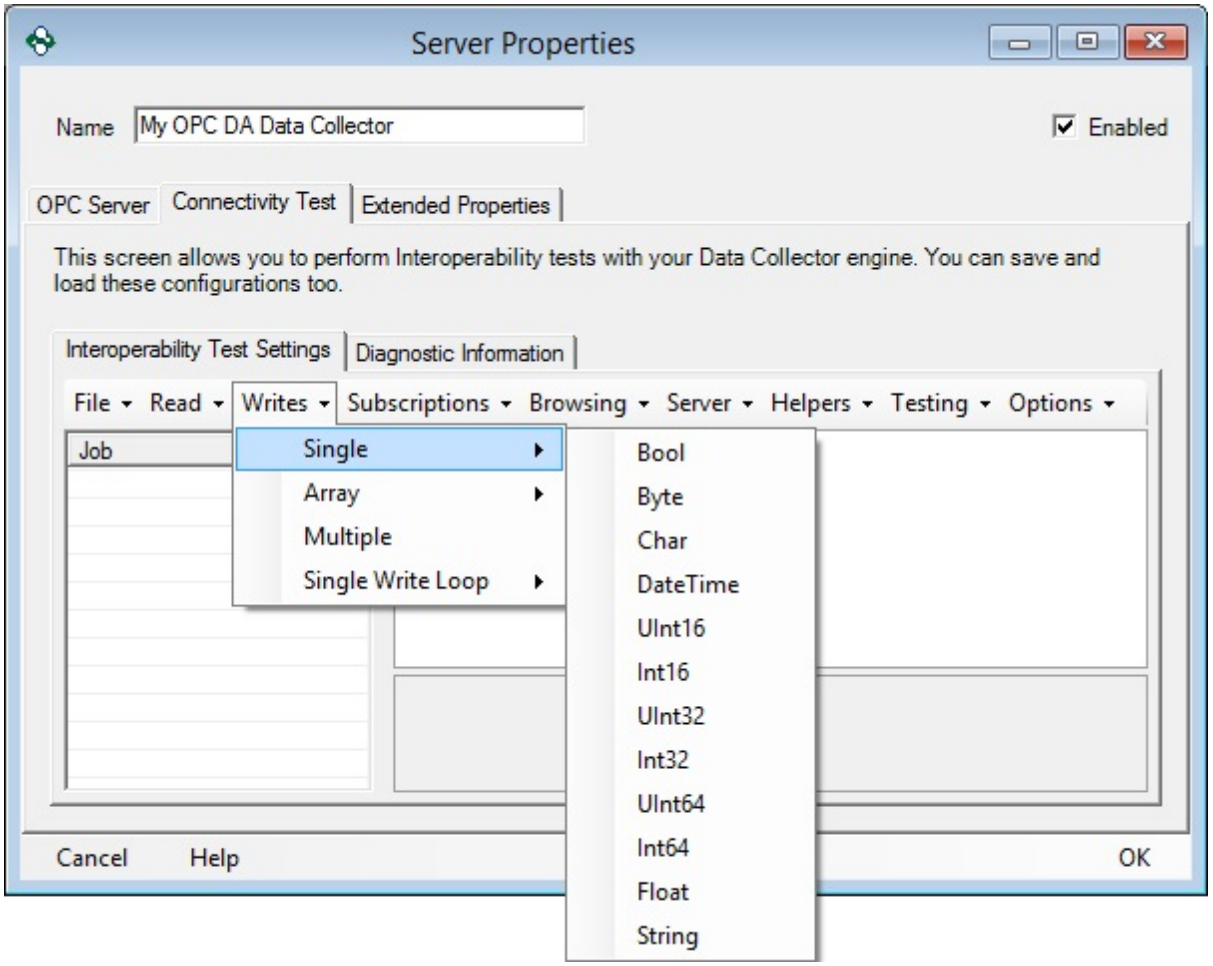

After the Write action has been selected, the write itself must be configured:

- **Description** – A description of the test. This field is not user configurable
- **Enabled** – When set to True this test will be enabled, and will be executed
- **ItemName** – Specifies the Item to be written to in the OPC Server. This field expects a fully defined path in the OPC Server
- **WriteValue** – Specifies the value to be written to the OPC Server Item. This value is ignored if RandomizeValue is enabled.
- **SyncIO** – When set to True a synchronous write will be performed, when False an asynchronous write will be performed.
- **ToDevice** – Specifies whether the write will be to the Device (True), or the server cache (False).

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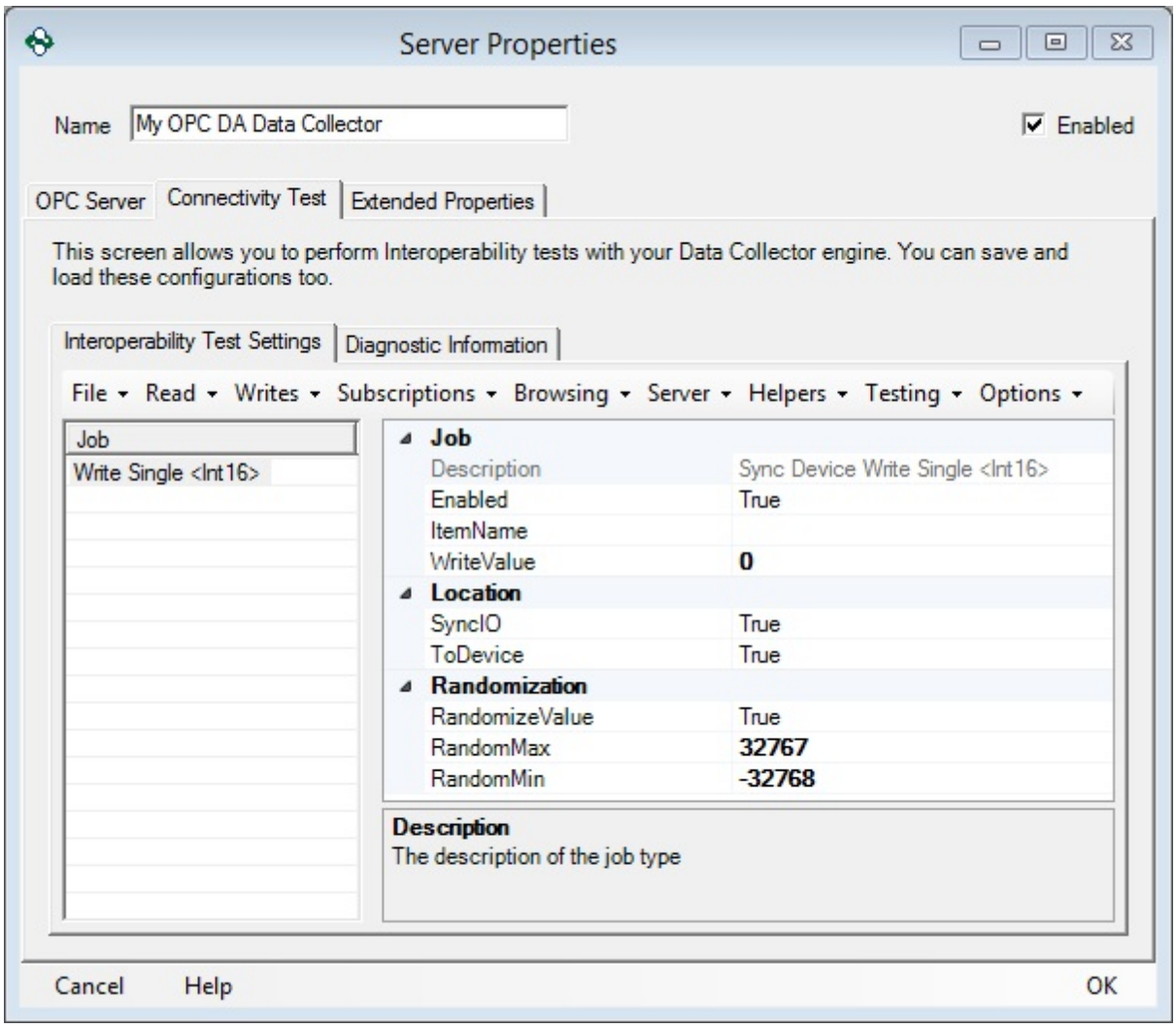
- **RandomizeValue** – When Enabled the OPC Data Logger will generate random values to be written to the OPC Server
- **RandomMax** – When RandomizeValue is enabled, this setting will specify a ceiling to the random values
- **RandomMin** – When RandomizeValue is enabled, this setting will specify a floor to the random values



Subscriptions Tab

The Subscription drop down allows the OPC Data Logger to test making a subscription to a specified item in the OPC Server

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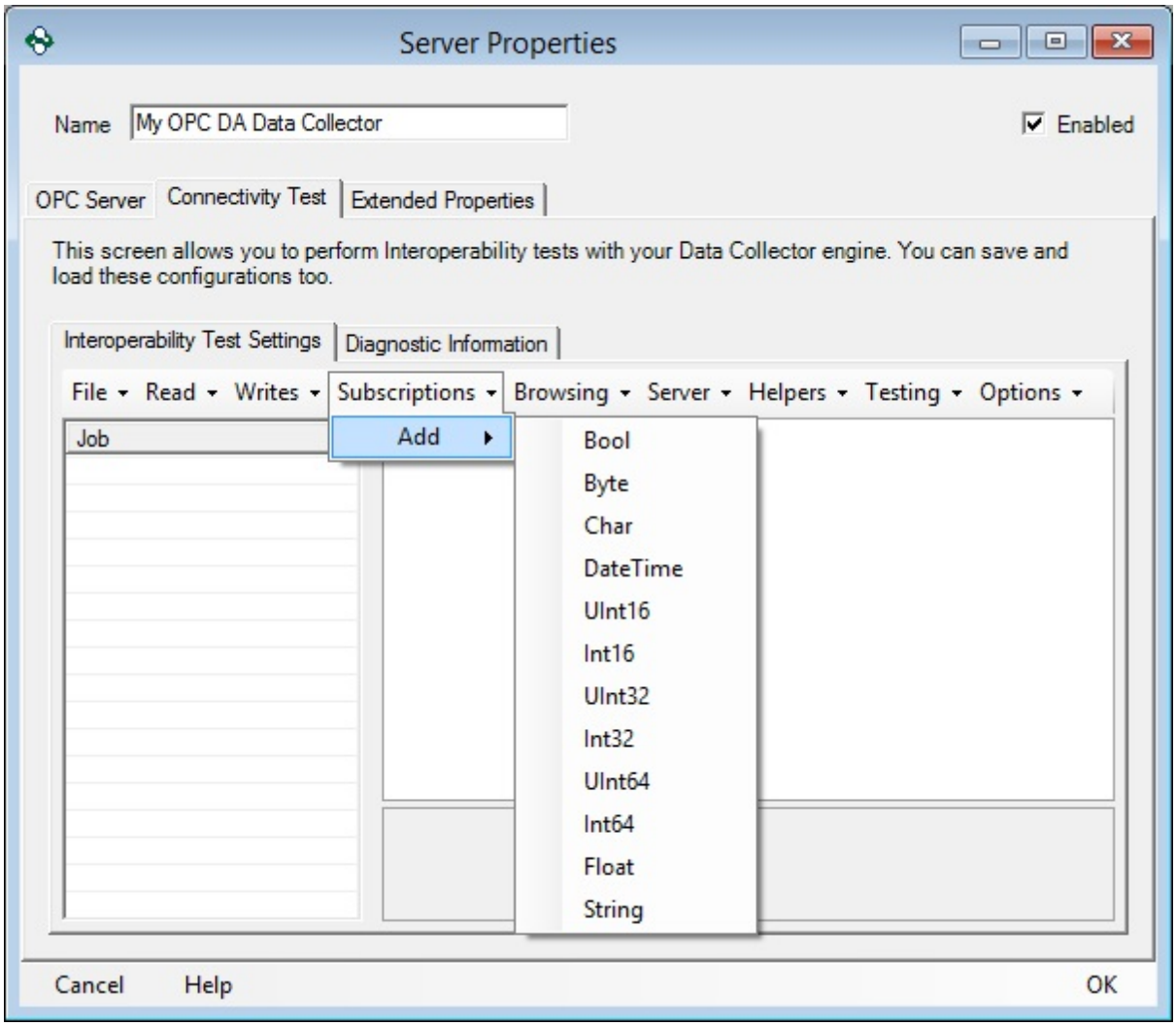

Once a subscription test has been added it must be configured:

- **Deadband** – Specifies the subscription deadband. Any value change within this deadband will not be reported to the OPC Data Logger as a new data value.
- **Description** – A description of the test. This field is not user configurable
- **Duration** – Specifies how long the subscription should be active
- **Enabled** – When set to True this test will be enabled, and will be executed

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- **ItemName** – Specifies the Item to be subscribed to in the OPC Server. This field expects a fully defined path in the OPC Server
- **ScanRate** – Specifies the update rate that the OPC Data Logger will request from the OPC Server
- **WriteValue** – Specifies the value to be written to the OPC Server Item. This value is ignored if RandomizeValue is enabled.
- **SyncIO** – When set to True a synchronous write will be performed, when False an asynchronous write will be performed.
- **ToDevice** – Specifies whether the write will be to the Device (True), or the server cache (False).
- **RandomizeValue** – When Enabled the OPC Data Logger will generate random values to be written to the OPC Server
- **RandomMax** – When RandomizeValue is enabled, this setting will specify a ceiling to the random values
- **RandomMin** – When RandomizeValue is enabled, this setting will specify a floor to the random values
- **ExpectedCallbackCount** – Specifies the expected number of callbacks, given the specified scan rate, and subscription duration. This value is not user configurable and is calculated by the OPC Data Logger.

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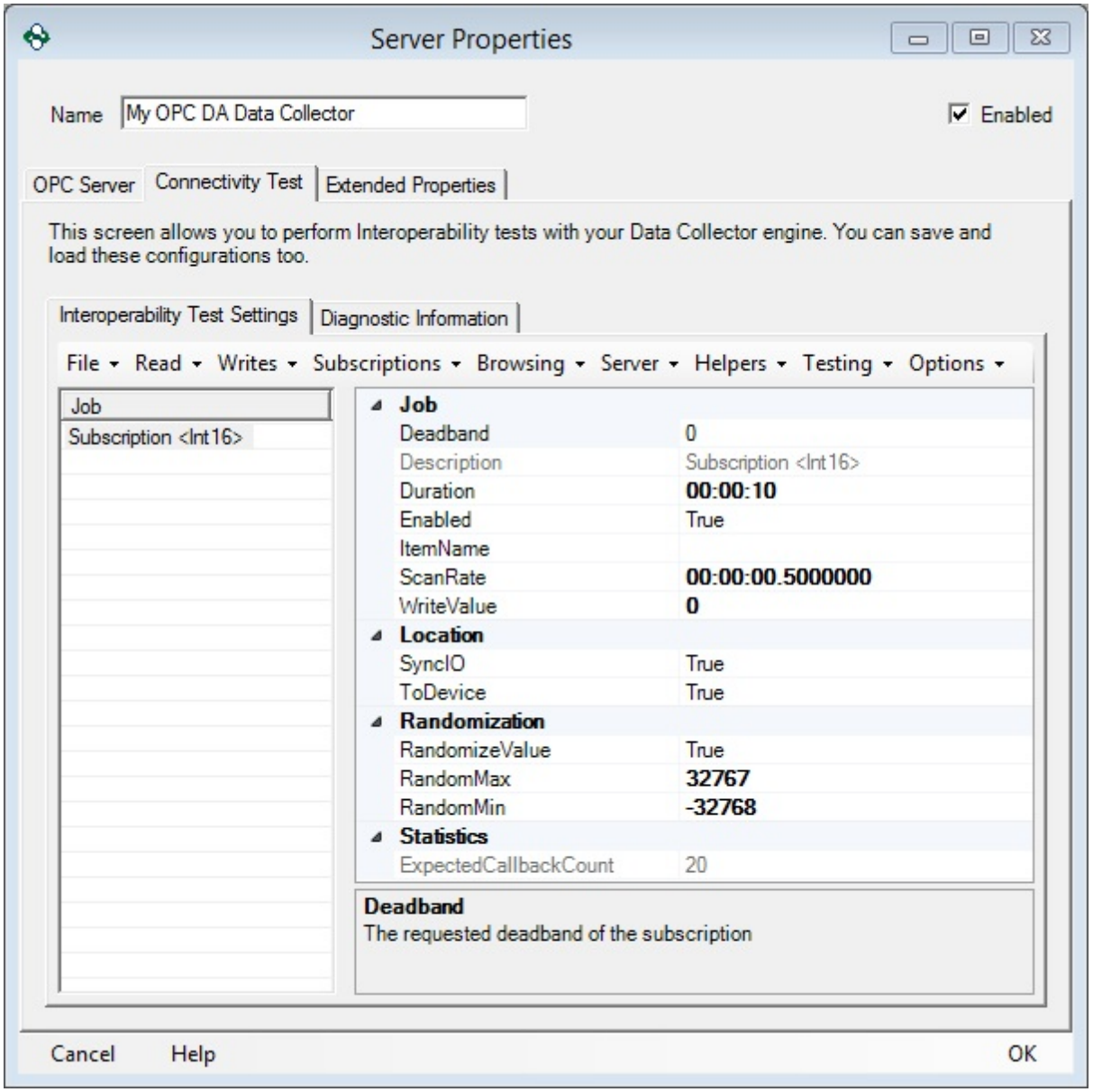

Browsing Tab

The Browsing drop down allows the OPC Data Logger to test browsing the OPC Server and determine the number of items and branches in the server to make sure all items can be browsed to.

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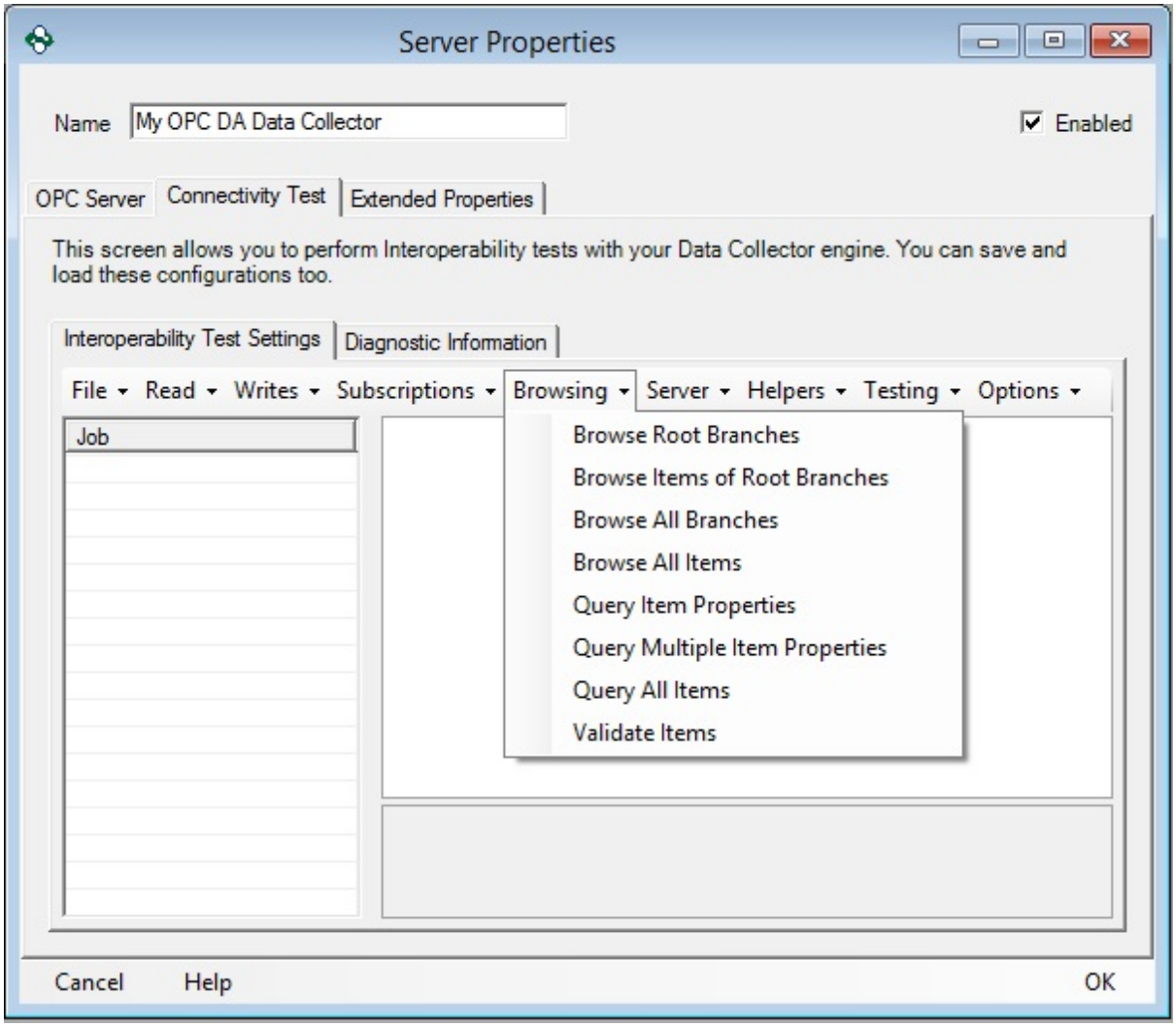

- **Browse Root Branches** – Returns the number of branches directly below the specified location.
- **Browse Items of Root Branches** – Browses all the items in the branches directly below the specified location.
- **Browse All Branches** - Returns the number of branches directly below the specified location as well as all child branches.
- **Browse All Items** - Browses all the items in the branches directly below the specified location and as well as all items within any child branches.

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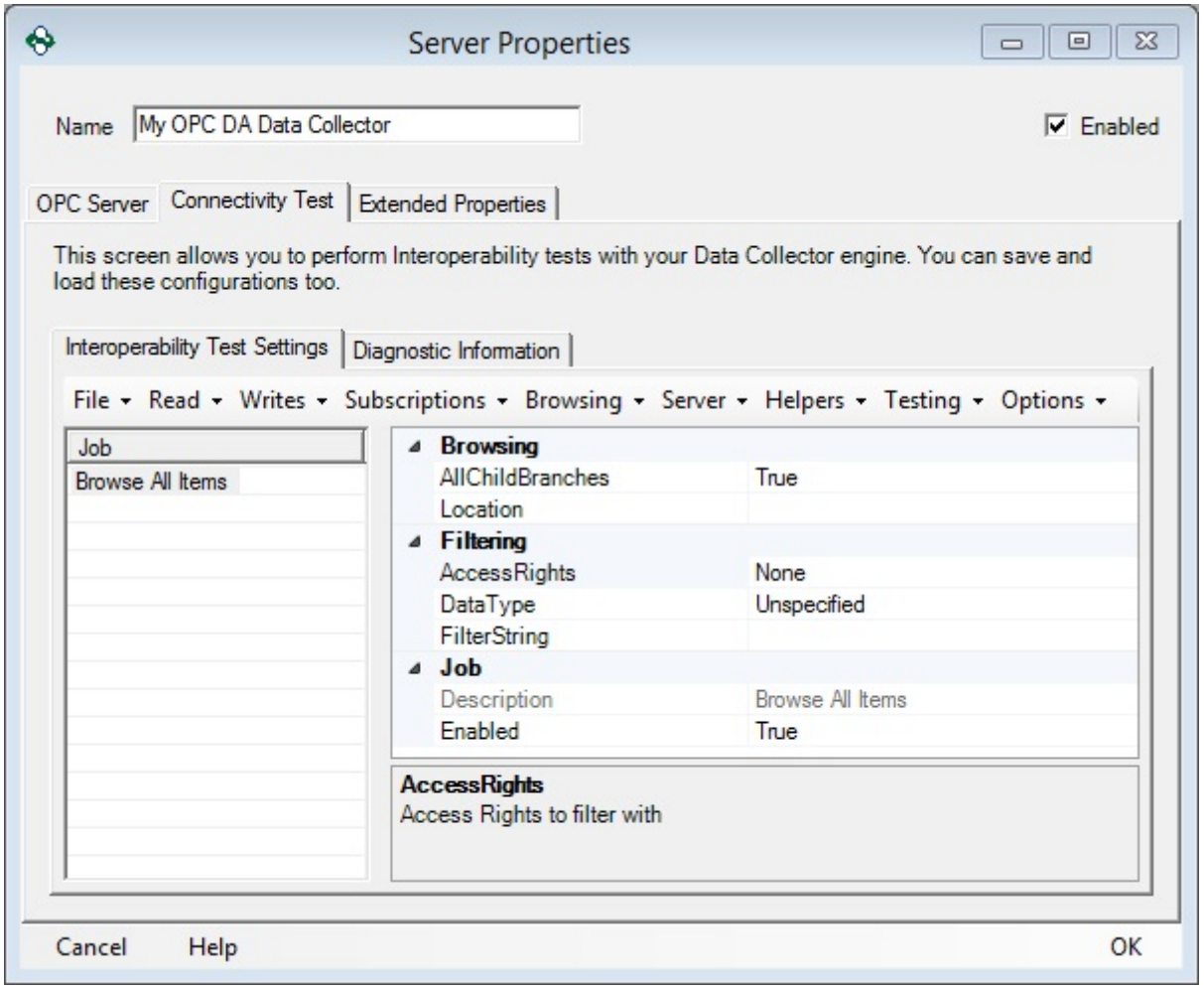

- **Query Item Properties** – Returns all the properties of the specified item.
- **Query Multiple Item Properties** - Returns all the properties of a group of specified items.
- **Query All Items** - Returns all items that meet the Browsing and Filtering criteria.

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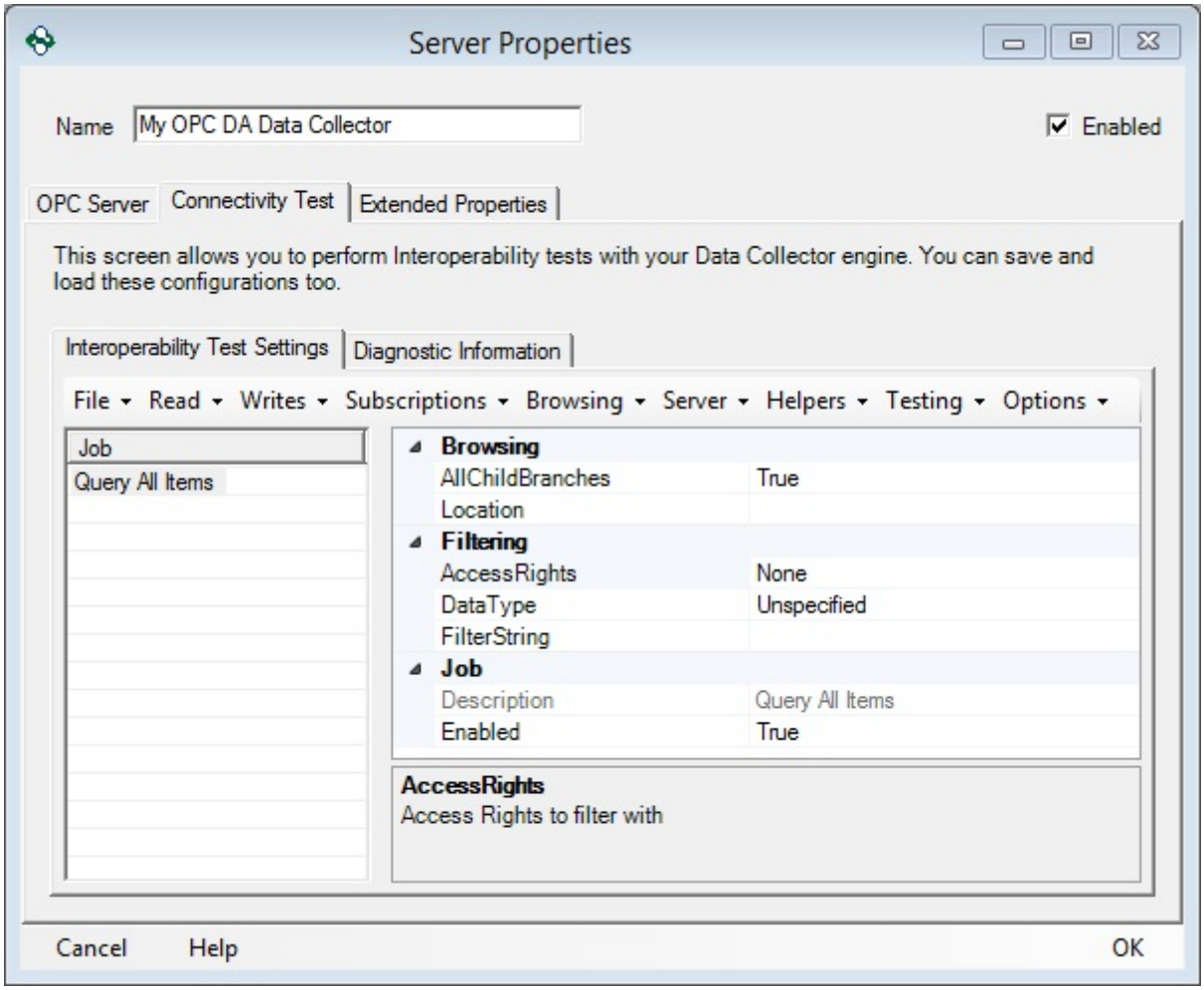

- **Validate Items** - Will validate up to five items and ensures that they exist within the OPC Server. This test can be used two ways.
  - Set AutoFindItems to True and use the filtering and browsing options.
  - Set AutoFindItems to False and specify the items using the ItemsToValidate.

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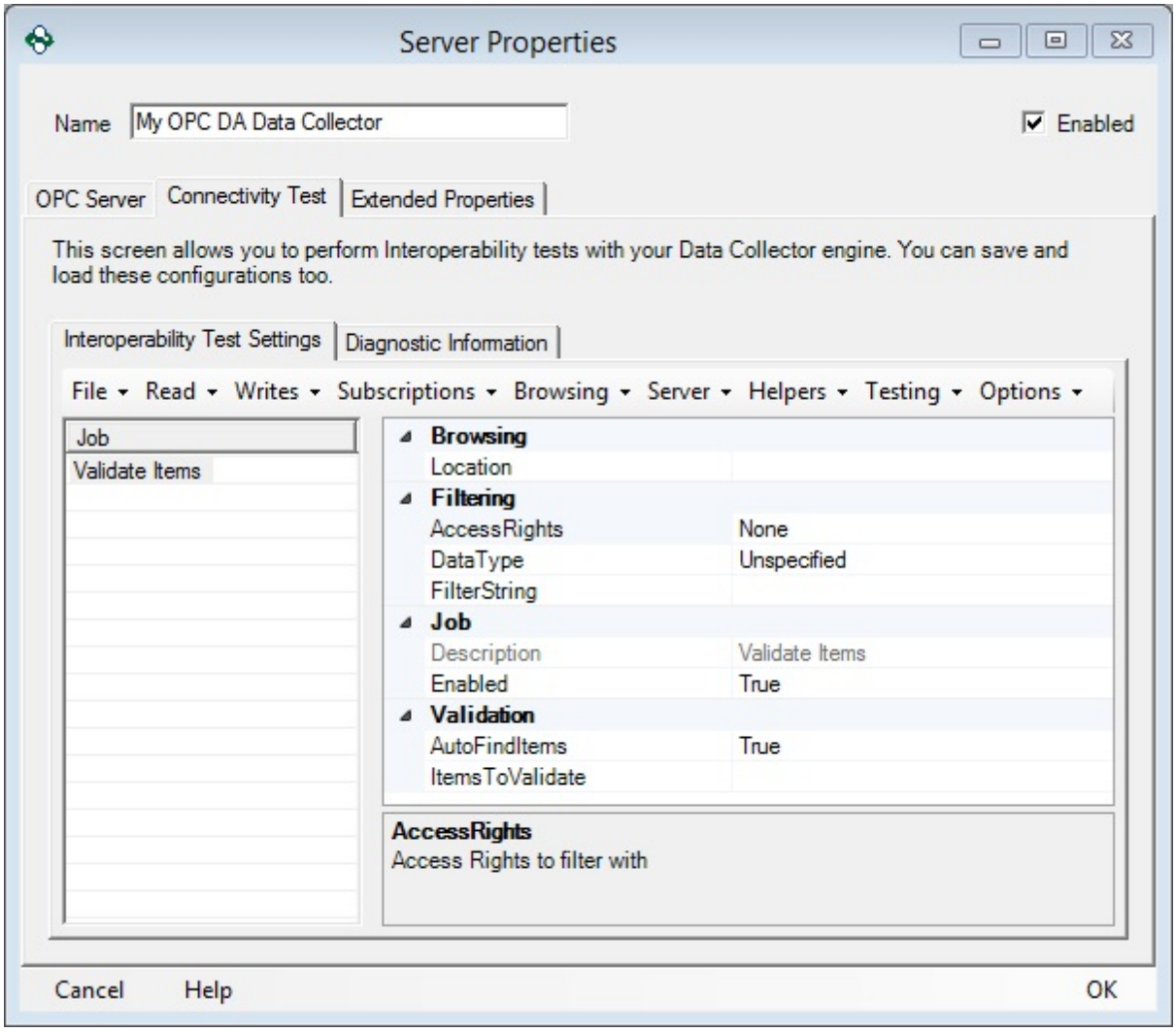

Server Tab

Sends a GetStatus event to the OPC server to determine whether a server connection can be made.

- **Get Server Status** – Returns if the server is running or not, the time, the server vendor and the version of the server.

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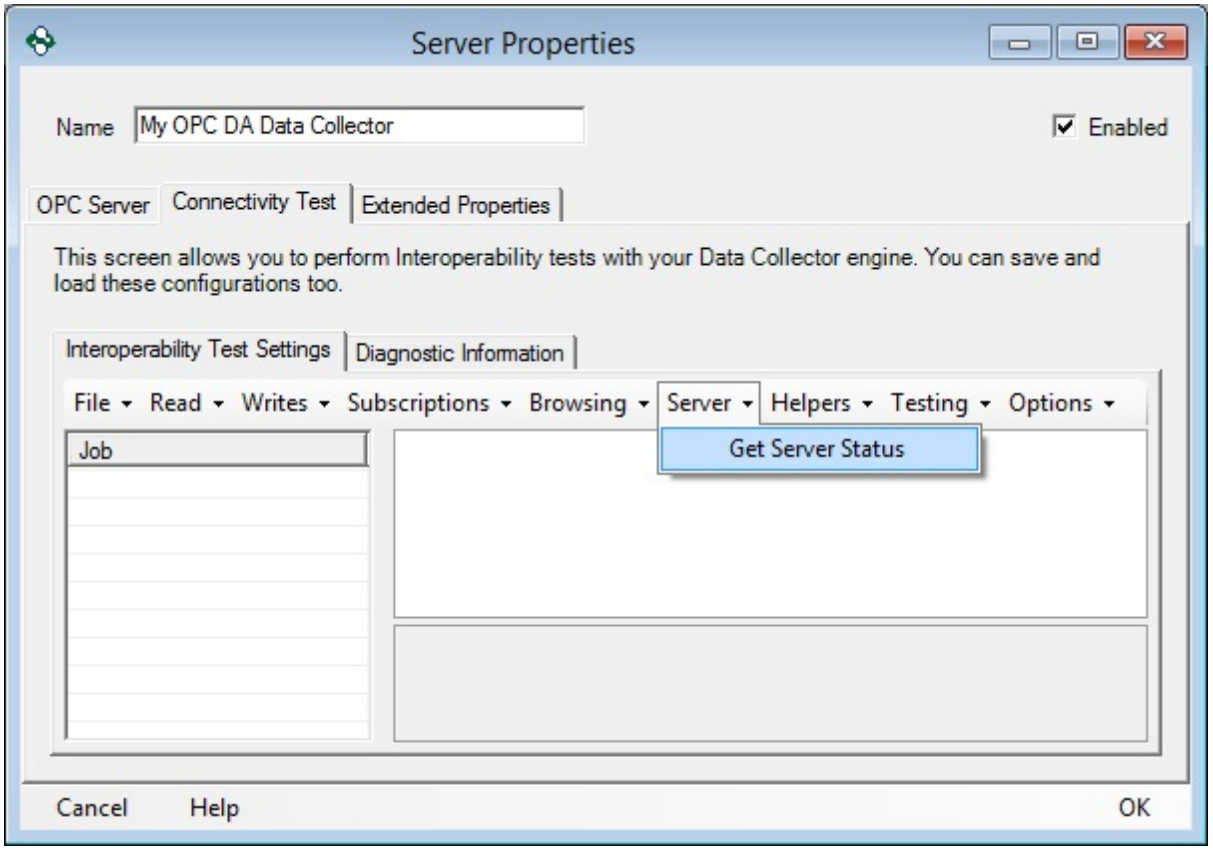

Helpers Tab

Rather than adding individual Read or Write tests, the Helper's dropdown can add all tests from a certain category:

- **Add all Read tests**: Will perform every possible read test on the specified item
- **Add all Write tests**: Will perform every possible write test on the specified item
- **Add all ReadWrite tests**: Will perform every possible read, and every possible write test on the specified item
- **Add Delay**: Will create a job that will sleep for a specified time interval. The maximum delay period is 5 minutes.

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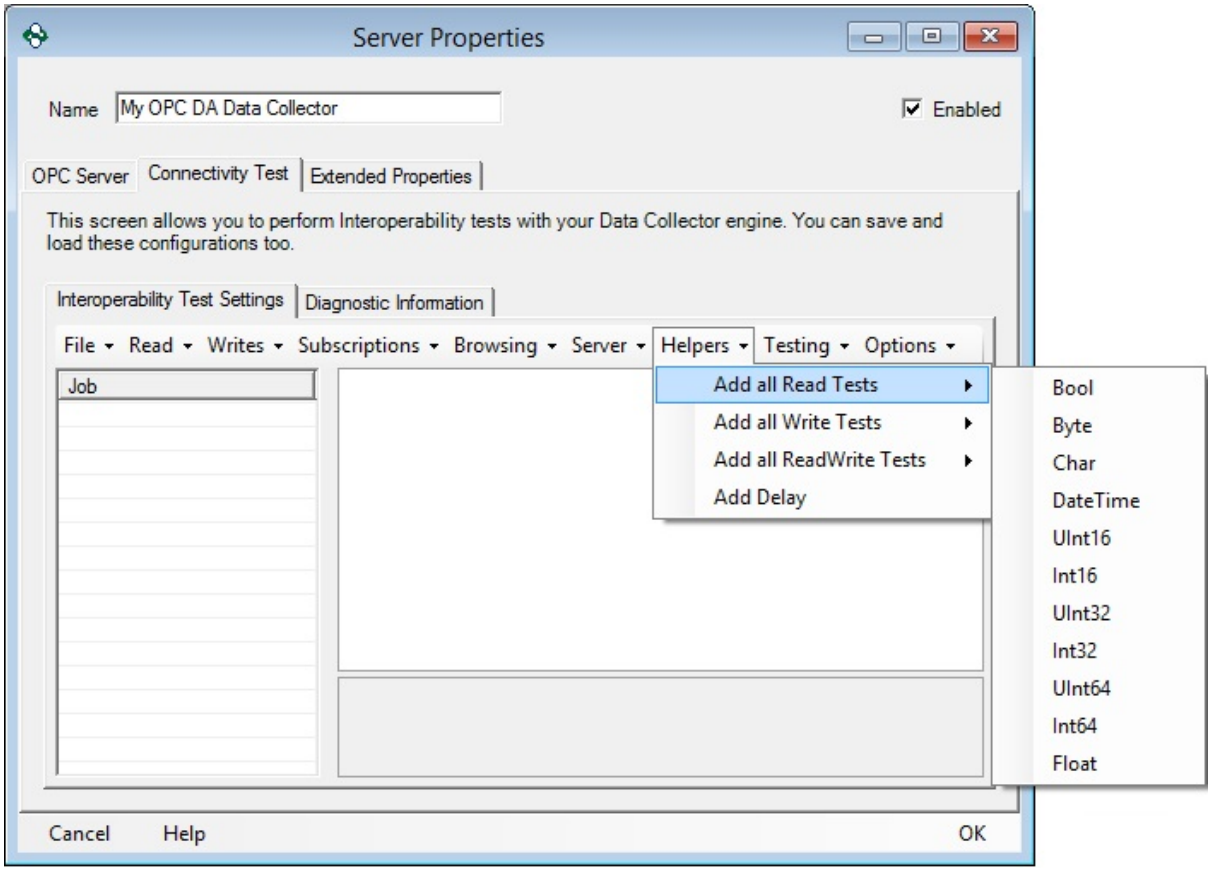

Testing Tab

The testing drop down will **Start** all configured jobs. Selecting the **Stop** option will stop all jobs that have not yet been executed.

The testing results will output to the Diagnostics Window tab.

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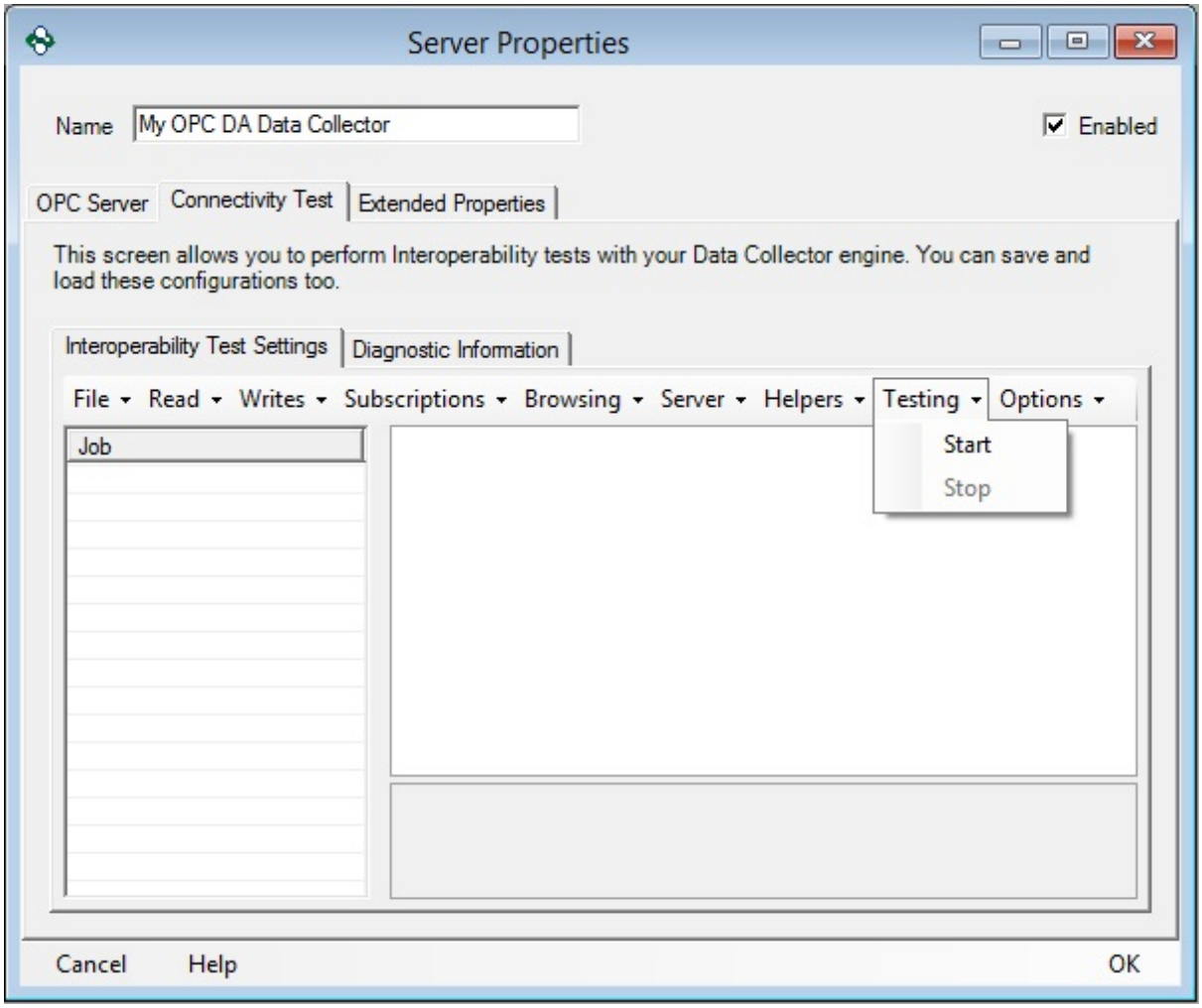

Options Tab

The Options tab has two additional settings that can be configured for Connectivity Testing.

- **Clear Log Before Test**: When enabled the OPC Data Logger will clear the Diagnostics Output before each test, rather than adding the new text to the end of the current log.
- **Test Loop**: Configures a loop of how many the configured jobs should be executed.

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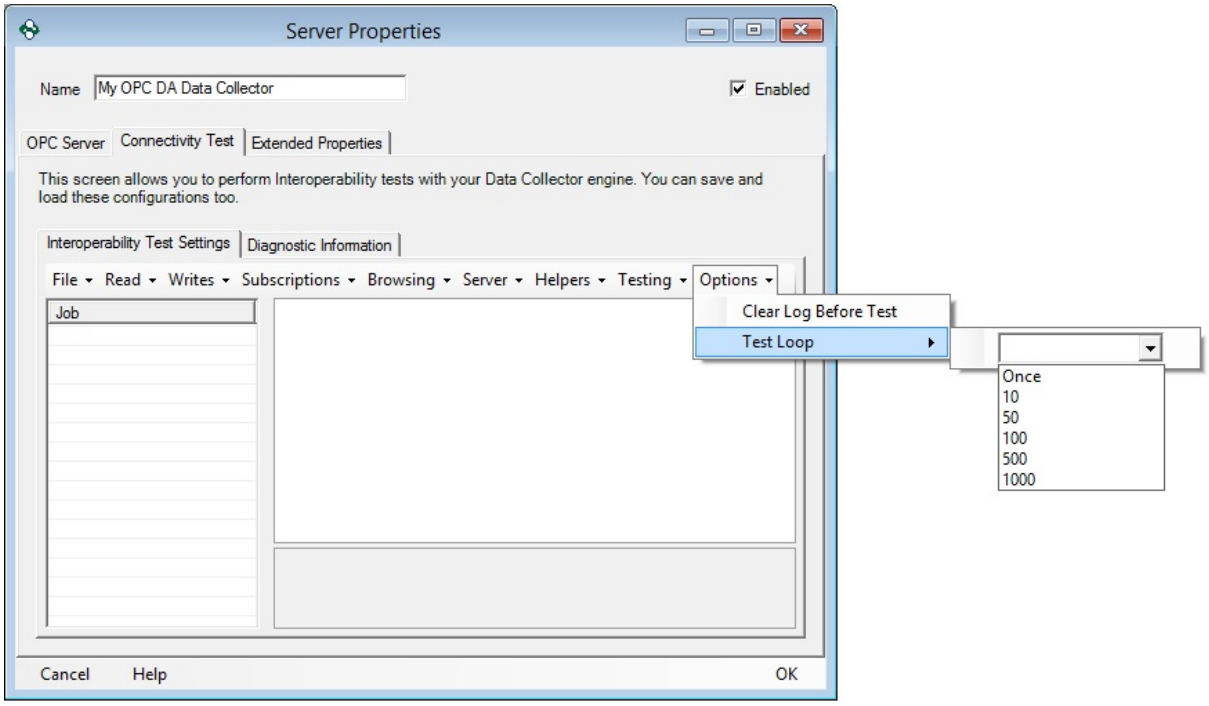

Diagnostic Information

The Diagnostics information tab will the results of the configured jobs. The log will capture all informational, warning, and error messages. The log can be Printed, Copied to the Clipboard, Exported to a CSV file, and Cleared from this tab.

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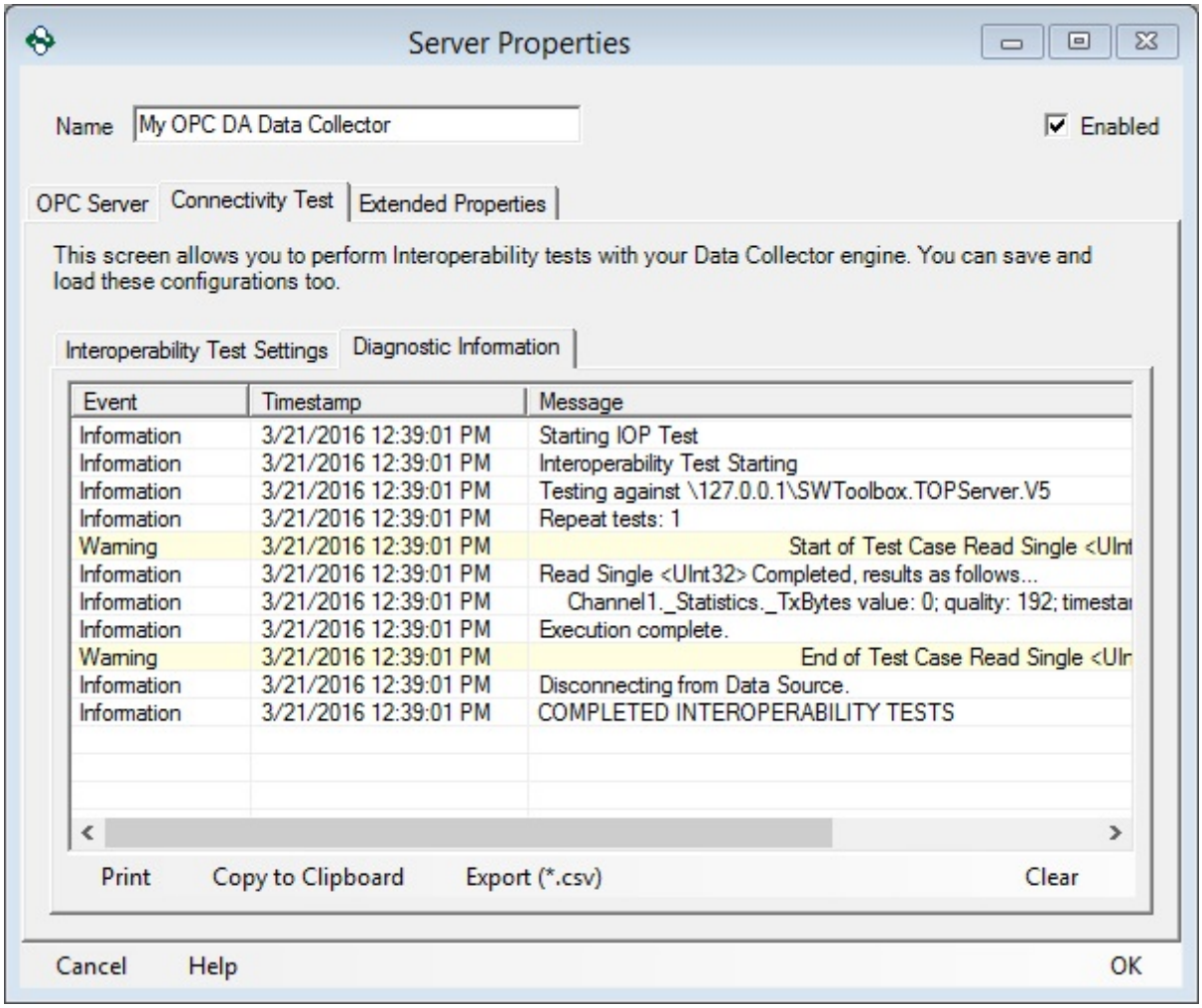

3.3.1.4 Extended Properties

The Extended Properties are additional properties that are available when working with an OPC DA Data Collector. The Extended Properties can be accessed by right clicking on the OPC Da Data Collector in the OPC Data Logger tree view, selecting Properties, and navigating to the tab labeled *Extended Properties*.

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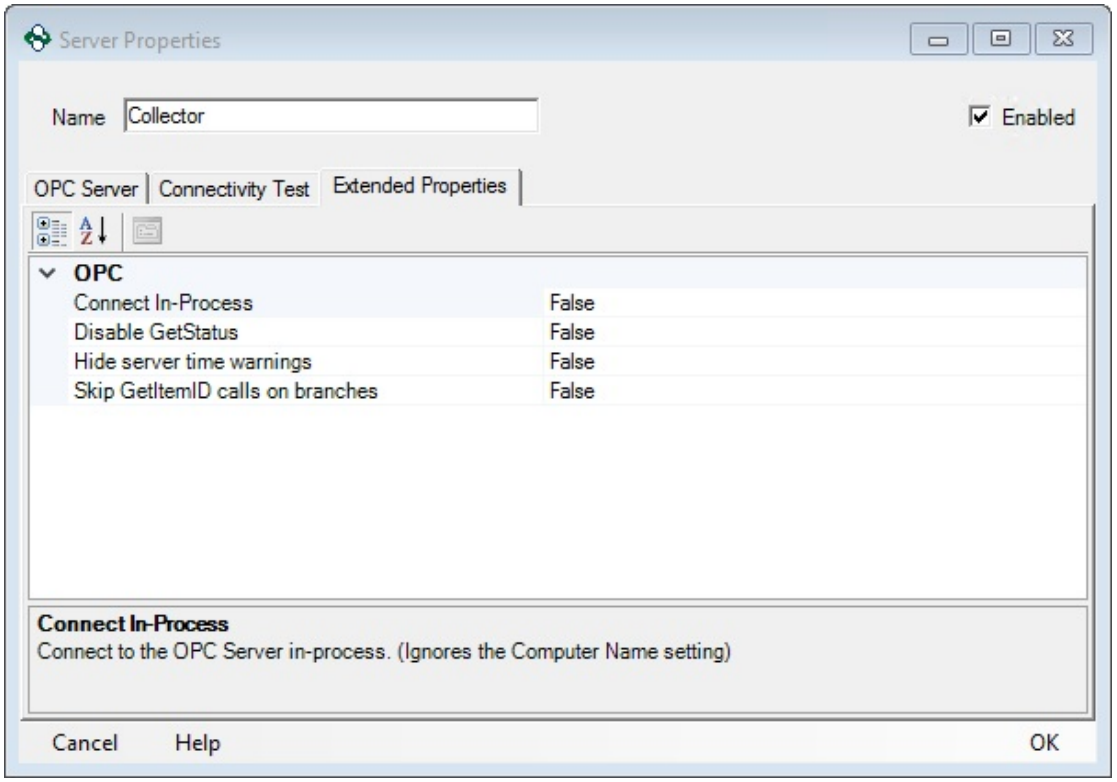
Extended Properties

- **Connect In-Process**: This setting determines whether the OPC Data Logger attempts to make an In-Process connection to the selected OPC DA Data Collector. If the OPC DA Server is registered as an In-Process server, then this setting should be set to True in the Extended Properties. Setting "Connect In-Process" to *True* will ignore the Computer Name setting, as In-Process connections can only be established on the local machine. The default value for this setting is *False*.

Disable GetStatus: When set to true, this property disables all "GetStatus" calls to the OPC DA server.

This option can avoid issues with OPC Servers that do not handle get status calls properly but should be used with caution. The GetStatus calls help the OPC Data Logger determine whether an OPC DA server is properly functioning, and disabling these status calls can increase the time it takes for the OPC Data Logger to realize there is a problem with the OPC DA server from which it is logging data.



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- **Hide server time warning**: This setting determines whether the OPC Data Logger will post OPC Server Update Time warnings in the Event log.

  "The OPC Server <OPC Server Name> is reporting its last update time, but the time does not seem to be changing."

  These errors indicate that the OPC Data Logger still has a good connection, but the OPC Server has not provided any values with new timestamps. Most of the time these warnings can safely be ignored; particularly in cases where the data may not be changing extremely frequently. The default value for this setting is *False*; when set to *True* the errors will be suppressed.

- **Skip GetItemID calls on branches**: This setting will determine whether the OPC Data Logger attempts to make GetItemID calls to the OPC Server, when dealing with a Branch. The default setting here is *False*, but should be set to *True* if the OPC DA Server is known not to support GetItemID calls on branches, or if the OPC Data Logger shows errors, indicating a problem with the callback, in the event log.

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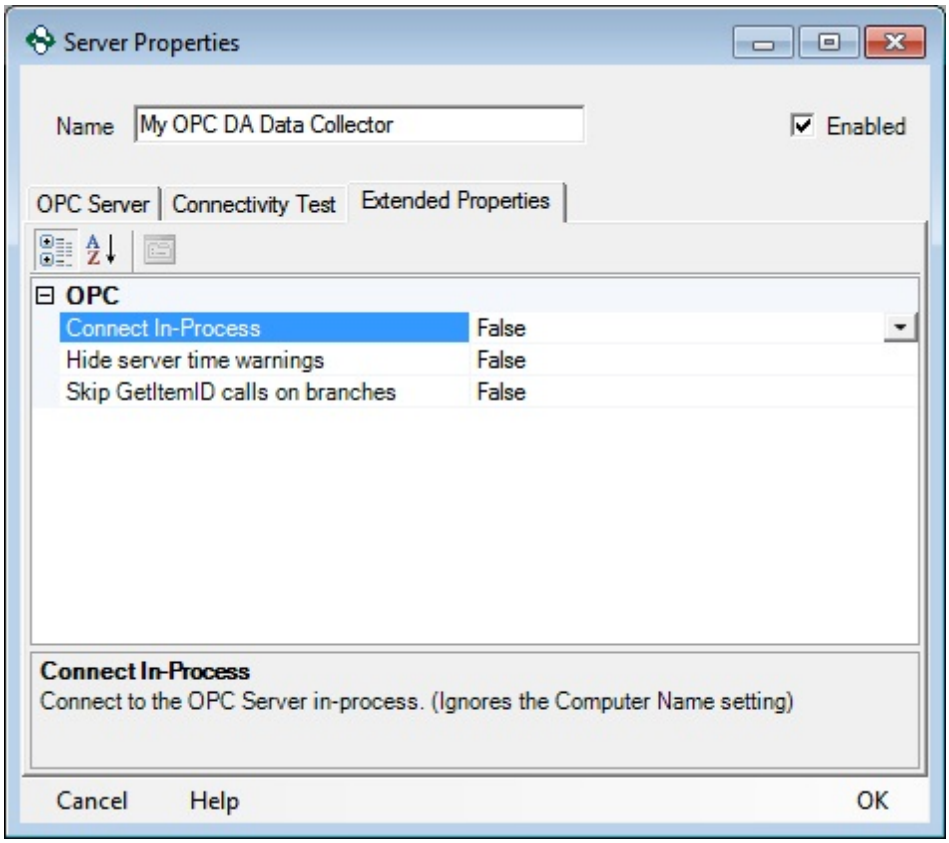

3.3.1.5 Duplicate Collection

Duplicating an existing data collection:

1. Right-Click on the existing Data Collection option, under Global Components, will allow duplicating an existing Data Collector.

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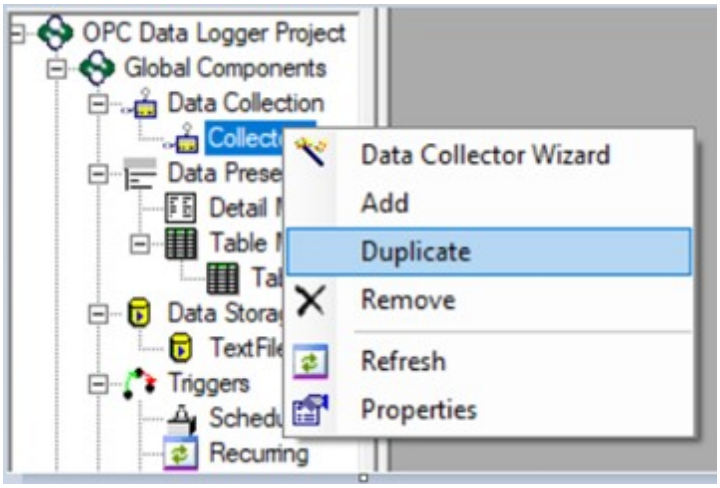
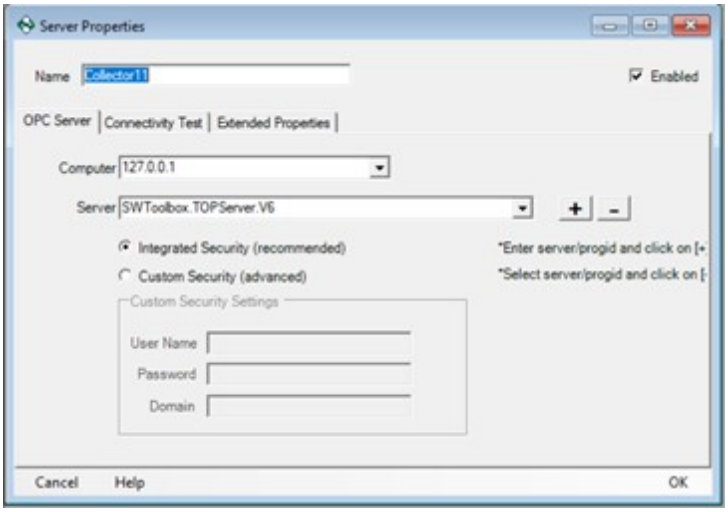


2. The new Data Collector will be created with all the existing properties of the selected Data Collection.



3.3.2 Data Presentation

The Data Presentation determines the format with which data will be logged to the Data Source, with each format offering different points for logging.

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Two different formats exist for logging data:

- Table Mode

In Table Mode every column will hold tag values for a single Tag, with the first column containing the timestamp that the entry was added to the Data Storage. Every Row will contain the value of the corresponding Tag, at the time that the entry was made in the Database, or text file.

- Detail Mode

In Detail Mode every row will hold several attributes for a single Tag, with each column dedicated to a single attribute. Which attributes get logged is fully configurable in the Detail Mode Setup.

Multiple Data Storages can utilize the same Data Presentation, even if they are for different storage mediums.

3.3.2.1 Table Mode

Logging data in Table Mode formats the data where each column contains the values for a single Tag, with the first column containing the Timestamp that the data was logged. Tags are added to a Table Mode Presentation by adding one or more Groups to the Presentation.

Values in Table mode are comma separated; the order in which tags are logged is determined by the order in which they appear in the table. Tags can be re-arranged using the blue **Up/Down** arrows.

General Properties

The top of very tab in the Data Presentation properties will display the presentation:

- **Name**: The Presentation name is the user configurable name, and how the Presentation format appears to other components in the OPC Data Logger Configuration.

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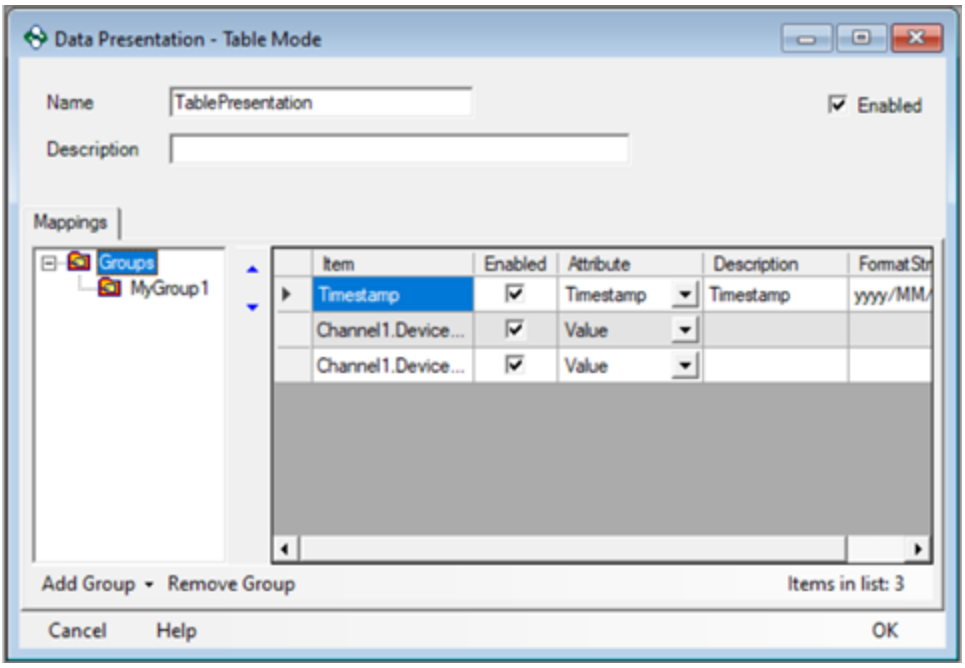
- **Description**: The Description is optional, but allows for additional details of the format to be added.
- **Enabled**: The Enable checkbox sets the status of the presentation. An inactive Presentation format will not be usable by a Data Storage, when logging data.



Column Headings

The column headings in Table Mode are not configurable, and reflect the following properties for each data point:

- **Item**: The Item Column displays the data points that will be logged. The value shown in this column will be the fully defined ItemID from the OPC Server.
- **Enabled**: The Enable check box sets the status of the presentation. An inactive presentation format will not be usable by a Data Storage when logging data.
- **Attribute**: The Attribute Column will display the property of the data point that is being logged. These values are not configurable in Table Mode.
- **Description**: The Description is optional, but allows for each item to be described in greater detail

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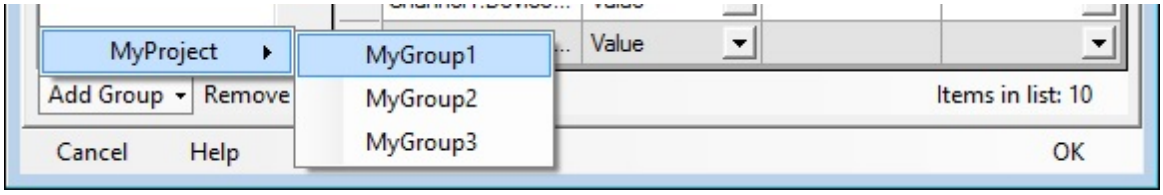
- **Format String**: The Format String field is optional, and configures the format of the data field being logged. This field is generally used to specify the format of the timestamp. Additional formats can be added; please contact Software Toolbox Support for help doing this.



- **Add Group**: This button brings up a list of all Logging Tasks and Groups available in the OPC Data Logger configuration. Selecting a group adds it to the current Data Presentation.
- **Remove Group**: This button removes the selected group, or removes all groups in the current data Presentation.

Attributes available for logging in Table Mode:

- **Value** – The value of the data point, provided by the OPC Server
- **Timestamp** – The time the value was logged to the file

Table Mode Example: (shown as raw data)

Timestamp,Tag1,Tag2,Tag3,Tag4,Tag5,Tag6,Tag7,Tag8,Tag9,

2015/07/28 02:11:45.9282,0,10,-500,0,True,0,0.3,0,0

2015/07/28 02:11:46.1387,0.6,85,-500,0,True,0.6,4.8,0,2.1

2015/07/28 02:11:46.3898,1.2,165,246,0,False,1.2,9.6,0,4.5

2015/07/28 02:11:46.8898,2.1,255,246,0,False,2.1,15,0,7.2

2015/07/28 02:11:47.1428,2.7,335,361.1429,1,True,2.7,19.8,0,9.6

2015/07/28 02:11:47.3739,3.6,415,361.1429,1,True,3.6,24.6,0,12

2015/07/28 02:11:47.6239,4.2,505,-188.8333,1,False,4.2,30,0,14.7

2015/07/28 02:11:47.8739,4.8,585,-188.8333,1,False,4.8,34.8,0,17.1

2015/07/28 02:11:48.1239,5.7,665,171.2,1,False,5.7,39.6,0,19.5

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2015/07/28 02:11:48.3740,6.3,755,171.2,1,False,6.3,45,0,22.2

Table Mode Example: (shown as chart)

Timestamp	Tag 1	Tag 2	Tag3	Tag 4	Tag5	Tag 6	Tag7	Tag 8	Tag 9
2015/7/28/ 2:11:45.928	0	10	-500	0	TRUE	0	0.3	0	0
2015/7/28/ 2:11:46.139	0.6	85	-500	0	TRUE	0.6	4.8	0	2.1
2015/7/28/ 2:11:46.390	1.2	165	246	0	FALSE	1.2	9.6	0	4.5
2015/7/28/ 2:11:46.890	2.1	255	246	0	FALSE	2.1	15	0	7.2
2015/7/28/ 2:11:47.143	2.7	335	361.1429	1	TRUE	2.7	19.8	0	9.6
2015/7/28/ 2:11:47.374	3.6	415	361.1429	1	TRUE	3.6	24.6	0	12
2015/7/28/ 2:11:47.624	4.2	505	-188.8333	1	FALSE	4.2	30	0	14.7
2015/7/28/ 2:11:47.874	4.8	585	-188.8333	1	FALSE	4.8	34.8	0	17.1
2015/7/28/ 2:11:48.124	5.7	665	171.2	1	FALSE	5.7	39.6	0	19.5
2015/7/28/ 2:11:48.374	6.3	755	171.2	1	FALSE	6.3	45	0	22.2

3.3.2.2 Detail Mode

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Logging data in Detail Mode formats the data where each column contains an attribute for the data point being logged. Each row is a new data point. Unlike Table mode, Detail mode does not require the selection of which specific tags will be logged; all points in a project associated with a data storage using Detail mode will be logged.

The order in which attributes are logged is determined by the order in which they appear in the table. Tags can be re-arranged using the blue **Up/Down** arrows, and can be added using the **Add** button.

General Properties

The top of very tab in the Data Presentation properties will display the presentation:

- **Name**: The Presentation name is the user configurable name, and how the Presentation format appears to other components in the OPC Data Logger Configuration.
- **Description**: The Description is optional, but allows for additional details of the format to be added.
- **Enabled**: The Enable checkbox sets the status of the presentation. An inactive Presentation format will not be usable by a Data Storage, when logging data.

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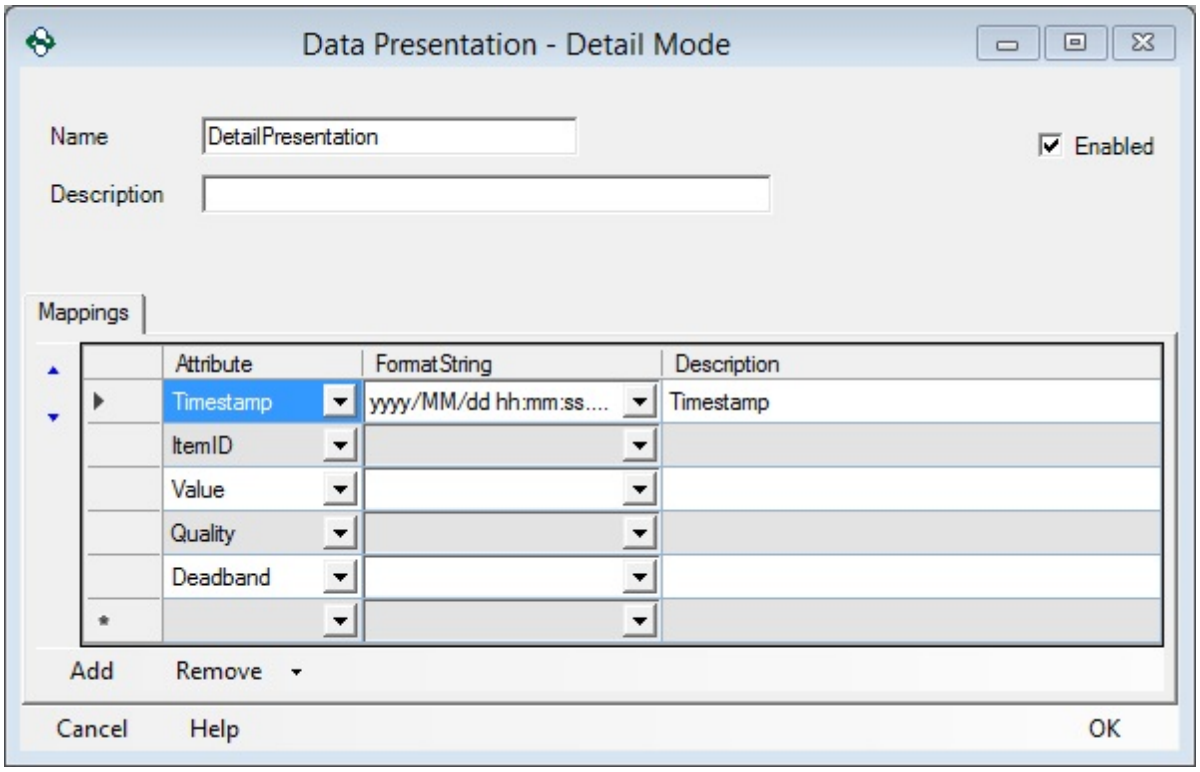

Mappings

- **Attribute**: The Attribute Column will display the property of the data point that is being logged.
- **Description**: The Description is optional, but allows for each item to be described in greater detail
- **FormatString**: Optional, but allows you to specify the format of the data being logged. This option is used mostly for time stamps. If the time stamp format you require is not available please contact Software Toolbox Support to find out how to add more FormatStrings.
- **Add**: This button adds another entry to the table, logging an additional attribute for the data point
- **Remove**: This button either removes the selected attribute, or all of them

Attributes available for logging in Detail Mode:

- **ID** – A globally unique ID given to each tag.

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- **Client Handle** – A unique numeric handle assigned by the OPC Data Logger.
- **Server Handle** – A unique numeric handled assigned by the OPC Server.
- **ItemID** – The completely defined Item ID from the OPC Server
- **Description** – The user defined description
- **Active** – Whether the item is active or inactive in the OPC Server
- **Data Type** – The data type with which the data point is being logged
- **Value** – The value provided for the data point
- **Quality** – The OPC quality code of the data point; 192 being Good, 0 being Bad.
- **Quality String** – asdf
- **Timestamp** – The OPC timestamp of the tag, provided in the data callback.
- **Previous Value** – The last value that was logged for the data point.
- **Previous Quality** – The last quality that was logged for the data point.
- **Previous Timestamp** – The last timestamp that was logged for the data point.
- **User Defined Name** – The user defined name shown in the group properties window.
- **Last Error** – The string value of the last known error.
- **Last Error Number** – The numeric value of the last known error.
- **Update Count** – The number of value changes for the specified data point
- **Scan Rate** – The rate with which the OPC Data Logger is subscribed to the data point in the OPC Server
- **Deadband** – The Deadband determines the percent change at which a new value is treated as significant. A deadband value of 10 would require any new value to be at least 10% different from the original value, before the OPC Data Logger treats it as a new and logs it.

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Certain attributes may, or may not be available for all Items.

Detail Mode Example: (shown as raw data)

Timestamp(yyyy/MM/dd hh:mm:ss.ffff),ItemID,Value,Quality
2015/07/28 02:11:45.8787,Channel4.Device1.Tag9,0,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag8,0,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag7,0.3,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag6,0,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag5,True,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag4,0,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag3,-500,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag2,5,192
2015/07/28 02:11:45.8787,Channel4.Device1.Tag1,0,192
2015/07/28 02:11:45.8787,Channel7.Device1.Tag9,0,192

Detail Mode Example: (shown as chart)

Timestamp	ItemID	Value	Quality
2015/7/28 2:11:45.879	Channel4.Device1.Tag9	0	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag8	0	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag7	0.3	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag6	0	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag5	TRUE	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag4	0	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag3	-500	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag2	5	192
2015/7/28 2:11:45.879	Channel4.Device1.Tag1	0	192

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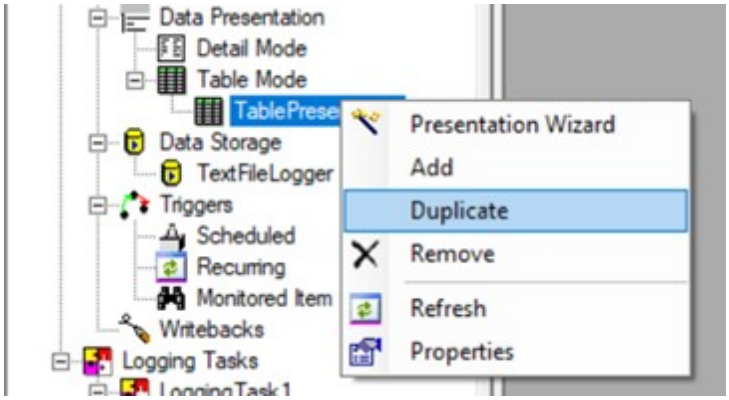
2015/7/28 2:11:45.879	Channel7.Device1.Tag9	0	192

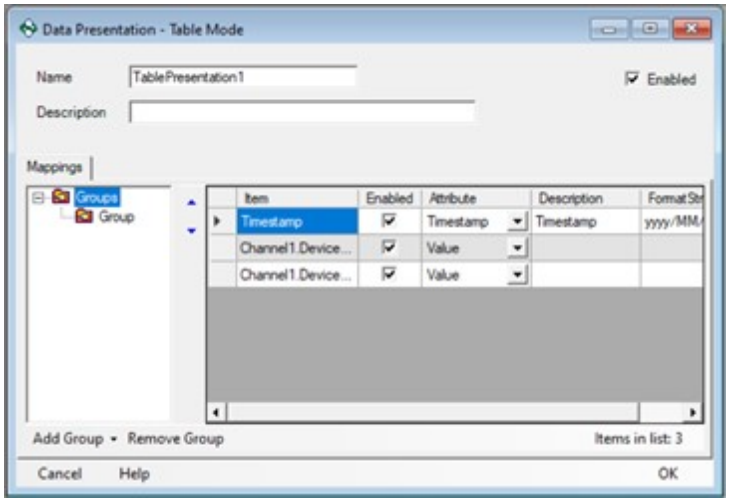
3.3.2.3 Duplicate Presentation

Duplicate existing data presentation:

1. Right-Click on the existing Data Presentation and select "Duplicate".



2. The new Data Presentation will be created with all the existing properties of the selected Data Presentation.



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3.3.3 Data Storage

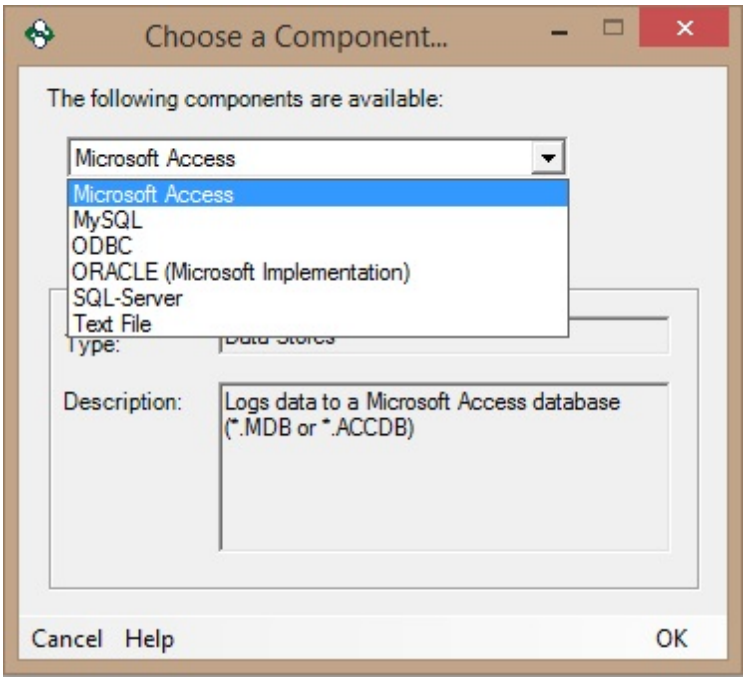
Selecting a Data Storage will determine where the data will be logged, and in what kind of storage medium. This section will describe how to manually add a new Data Storage component to the OPC Data Logger configuration, without using the Data Storage Wizard, and add the Data Storage to a Logging Task.

Adding a Data Storage Component

1. In order to create a new Data Storage component, right click on the **Data Storage** item in the tree view, and select the **Add** option.
2. The drop down will specify what type of Data Storage will be created.

   Open Property Page of this component – This checkbox will automatically bring up the properties dialog for the new Data Storage component after it is created. This box is checked by default.

3. The OK button will create the new Data Storage, and open the Properties dialog, if this setting was left enabled.



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Configuring the properties for each Data Storage will be covered in-depth, in the help file section for that Data Storage:

- Text File
- Microsoft Access
- MySQL
- ODBC
- SQL-Server

Enabling a Data Storage Component for Logging

A Data Storage component alone will not log data to the specified storage medium, unless this Data Storage component is associated with a Logging Task.

If no Logging tasks exist, see the related section of the help file for information on creating a new Logging Task.

1. Right click on the Logging Task that the Data Storage component should be associated with, in the OPC Data Logger tree view, and open the **Properties** dialog.
2. The **Add** button under the **Log To** tab will list all available Data Storage components that are currently available to log to.
3. Once a Logging Component has been added from the list, the **Enabled** checkbox determines whether the Data Storage is enabled for logging.

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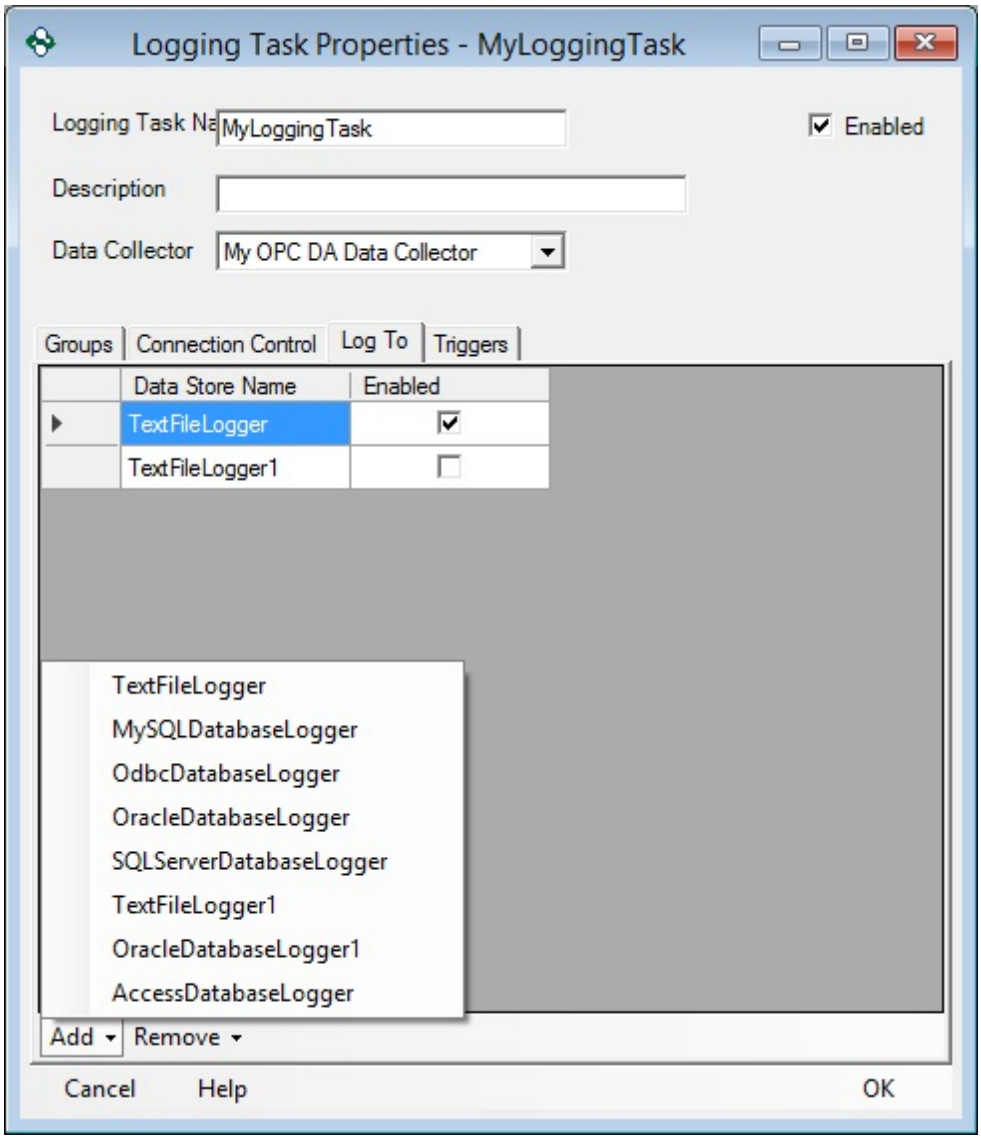

3.3.3.1 Text and CSV Files

The OPC Data Logger supports logging data to text files data storages, most commonly:

- Comma Separated Value Files(*.**CSV**)
- Text Files (*.**TXT**)

In order to add a text file Data Storage to the OPC Data Logger configuration right click on the Data Storage Global Component, and use

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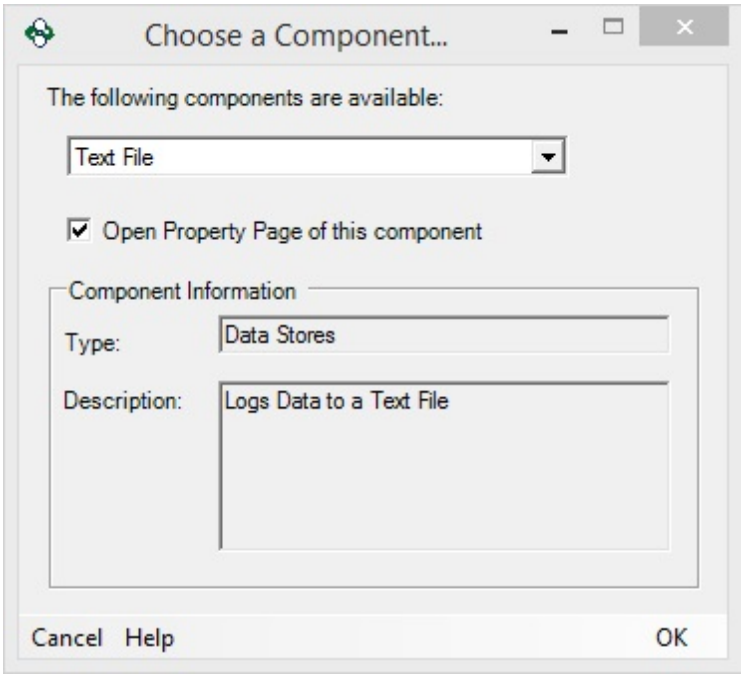
the **Add** button to add a new Data Storage. This section will describe all available properties when a Text File component is used as the Data Storage medium.



General Properties

- **Name**: A unique name that identifies the component – this will be how the Text File Data Storage appears in the tree view, and how other components reference the Data Storage.
- **Description**: Optional description of the Data Store
- **Presentation**: The Data Presentation that will be used to store data in the Text File. This drop down will show a list of all Data Presentation available in the OPC Data Logger configuration.
- **Enabled**: When checked the Text File Data Storage is active and available for use by logging tasks. When unchecked no data will be stored to the Text File through this component.

File Properties

- **Filename**: Specifies the full path where the text file will be logged. If the specified file does not exist it will be created when the OPC

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Data Logger starts logging data. If logging to a text file specify the file name with a .txt extension – .csv should be used when loggin to a CSV file.

- **Open File in Shared Mode**: Allows the text or CSV file to be opened while the OPC Data Logger has the file open for logging. When unchecked, the OPC Data Logger must close the file before it can be opened by a user.
- **File Mode**: If a file with the given name already exists in the specified directory this setting determines how the new data will be logged.
    - **Overwrite**: Delete the old file, and create a new file for the new values.
    - **Append**: Appends the new data to the end of the existing file. A new header will be inserted as a separator.
- **Formatting**: Determines how the data will be formatted in the text file.
    - **Column Separator**: Specifies how the data records will be separated in the text file. It is recommended to keep this at the default (comma ‘,’), particularly if logging to a CSV file.
    - **Boolean 1/0**: When checked, Boolean values will be logged as 1 when high, and 0 when low, rather than TRUE when high and FALSE when low.

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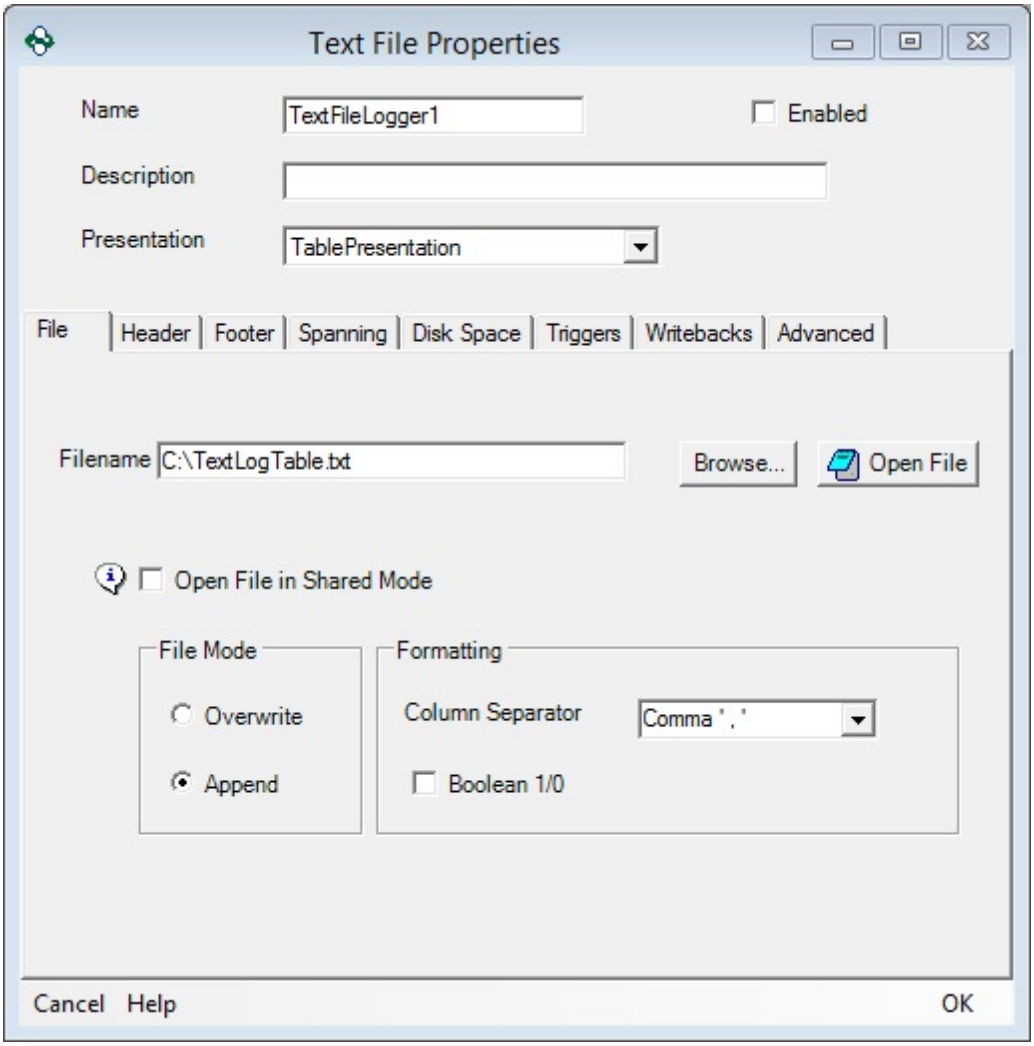

Header Properties

- **First Row is Column Names:** When checked, the first line in each text file will be the column names. When unchecked, a custom header can be specified in the *Static Header* text box

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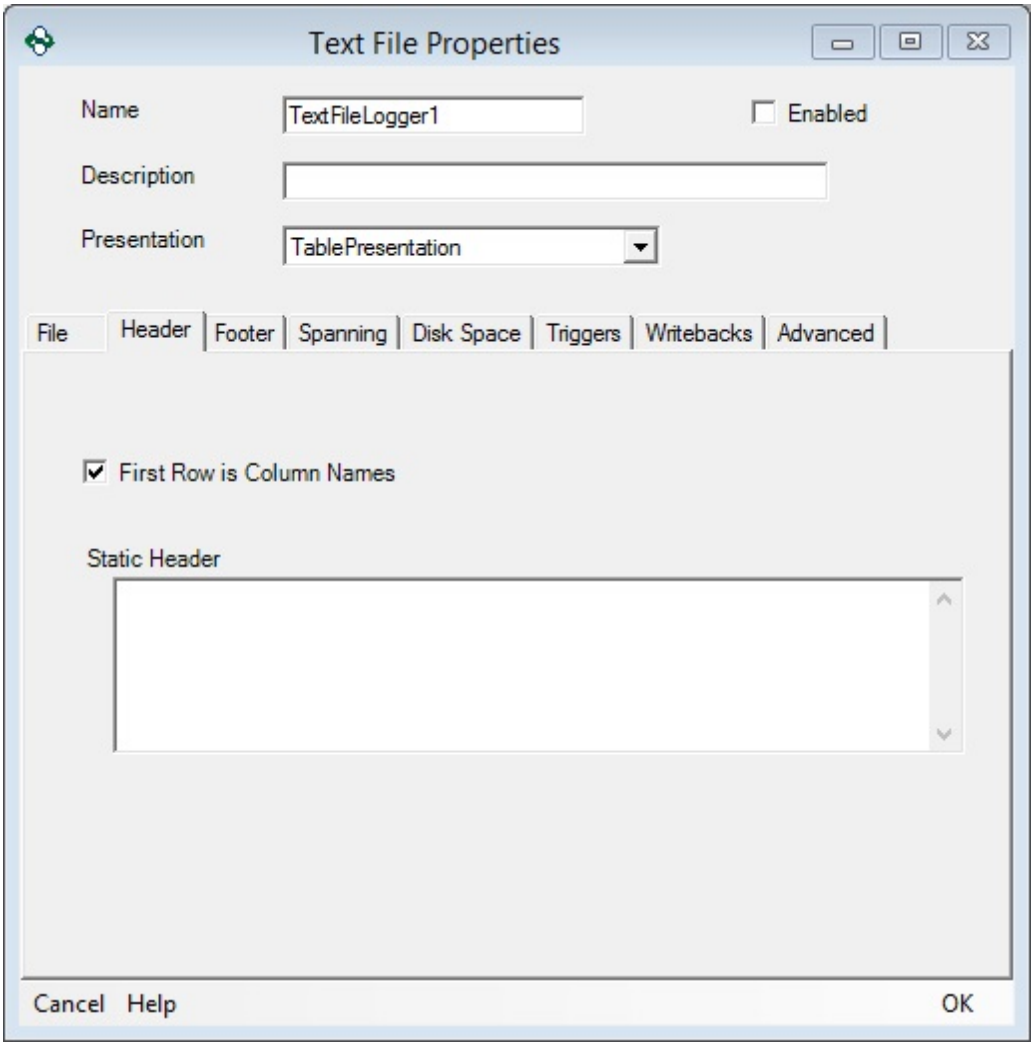

Footer Properties

The *Static Footer* text box can be used to specify a custom footer for the text file. This is not mandatory.

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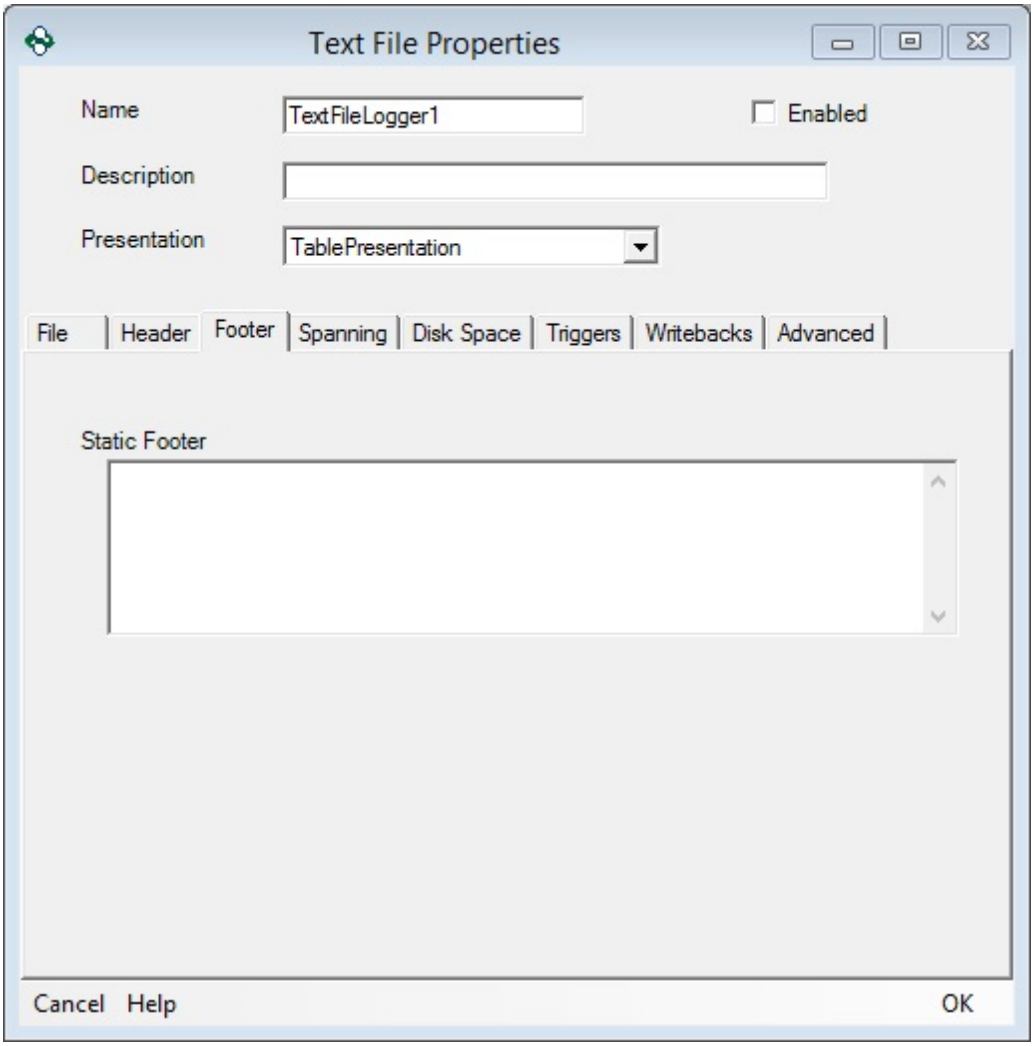

Spanning

- **Enable Spanning**: Enables or Disables file spanning for the text file. For more information on file spanning refer to the File Spanning section.

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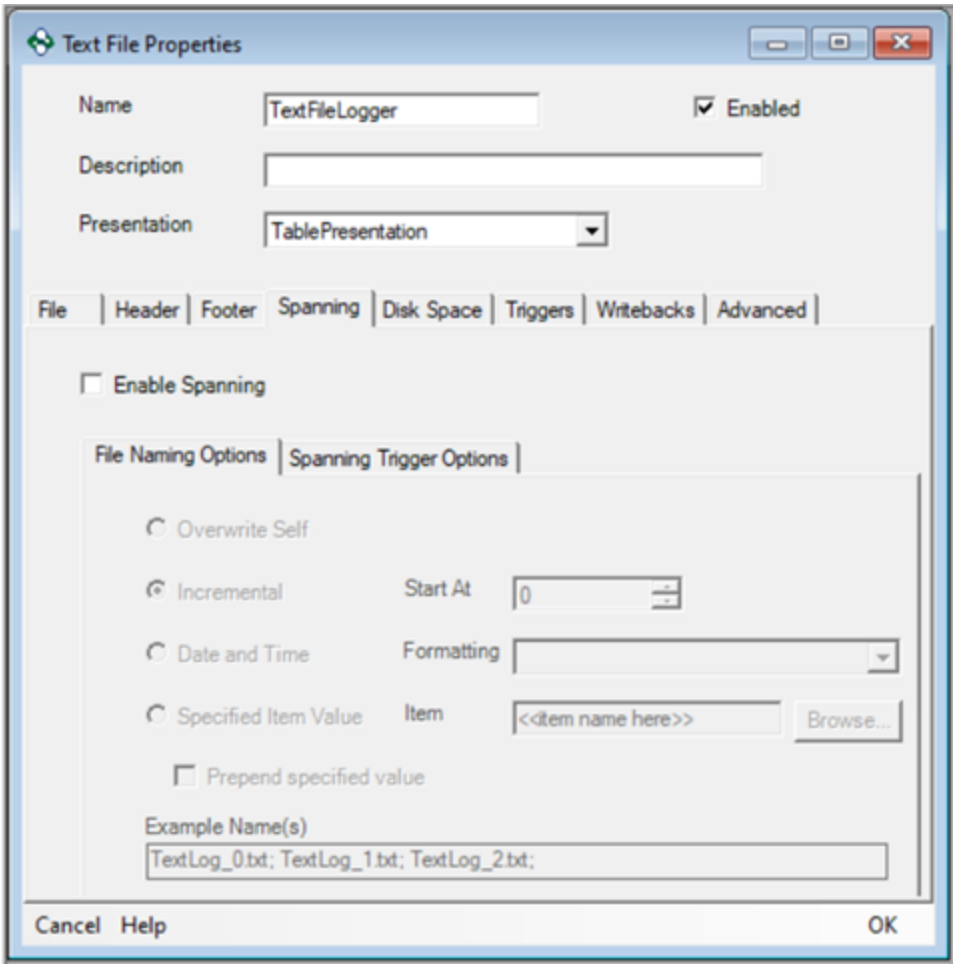

Disk Space

- **Minimum Disk Space**: Specifies the minimum available disk space threshold. When this minimum disk space threshold is met, the OPC Data Logger will stop logging until some disk space is freed up.

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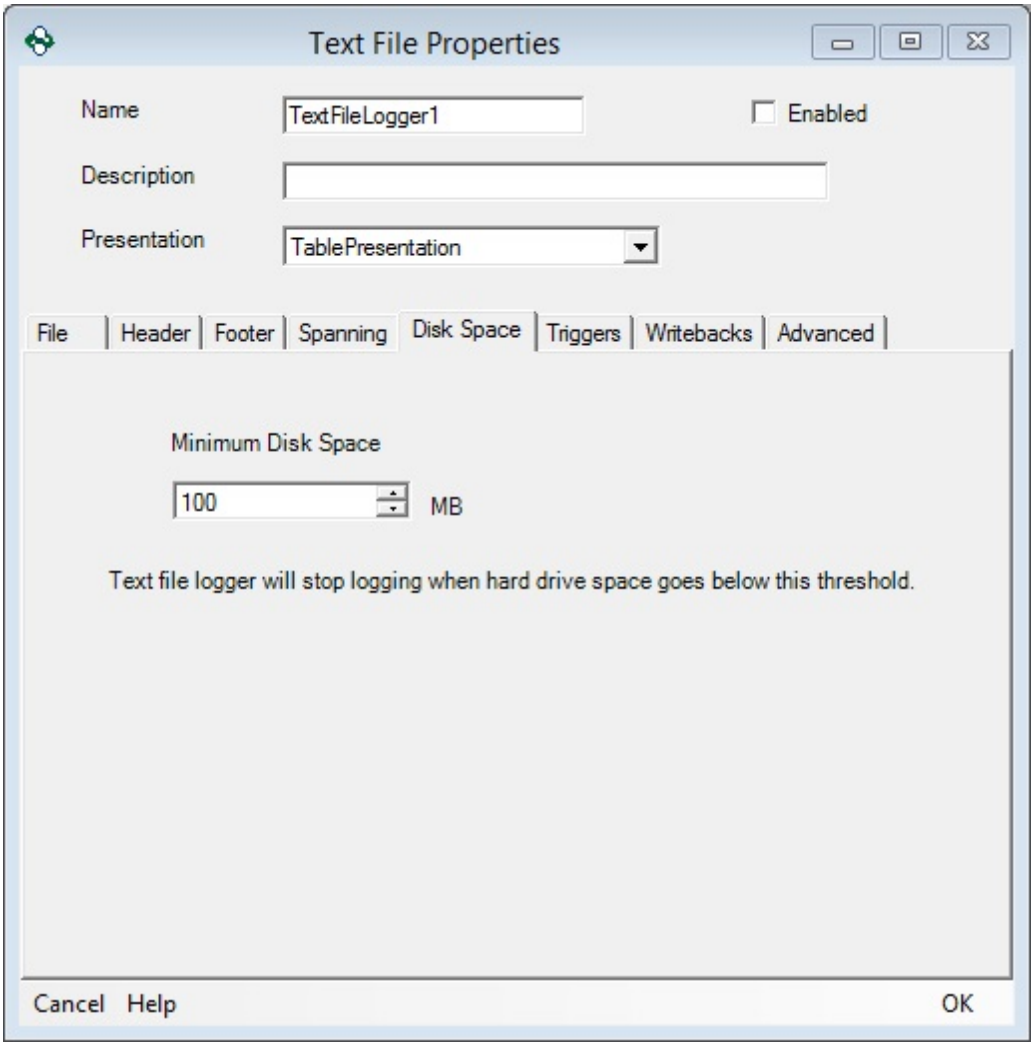

Triggers

Triggers can be used to affect how data is logged to text files; reference the Triggers section of the help file for more information on how.

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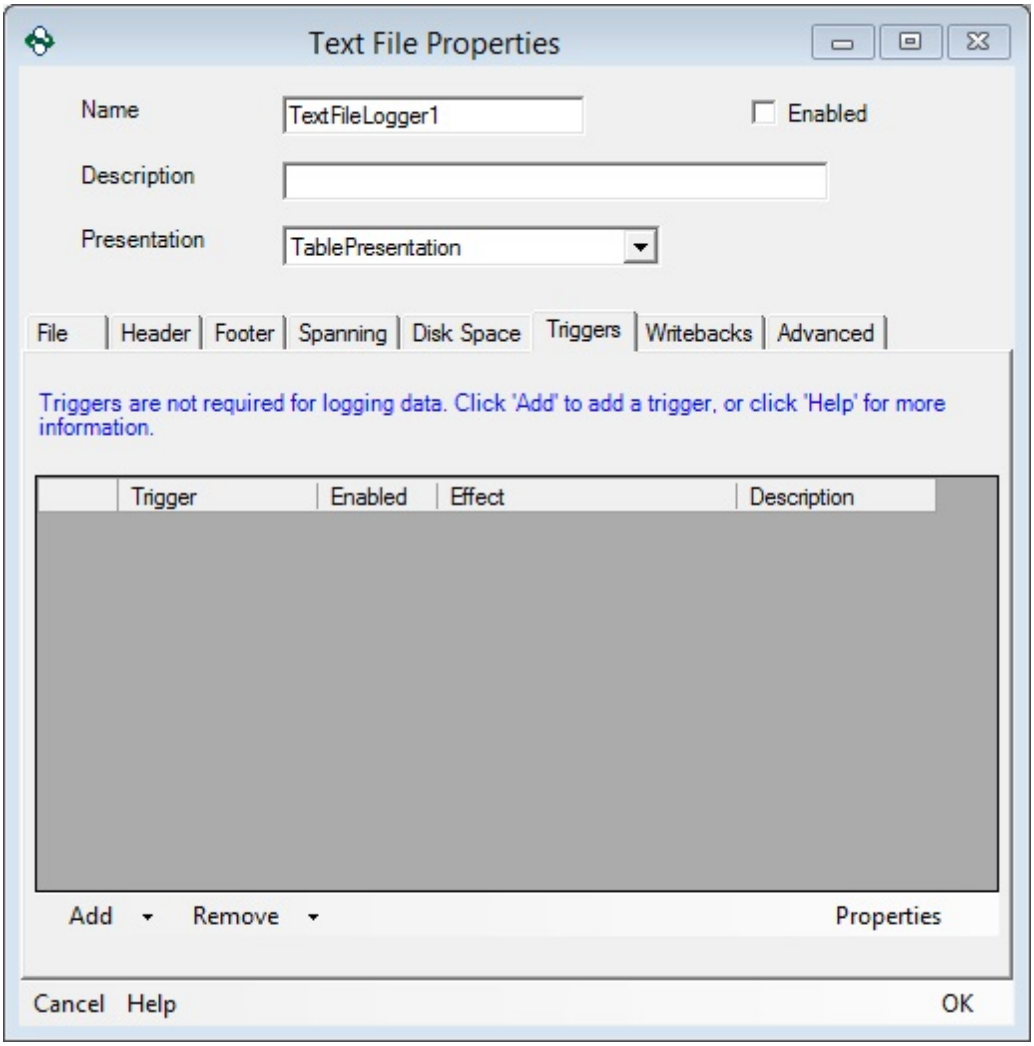

Writebacks

This tab allows configuration of Text File writebacks; reference the Writebacks section of the help file for more information on how.

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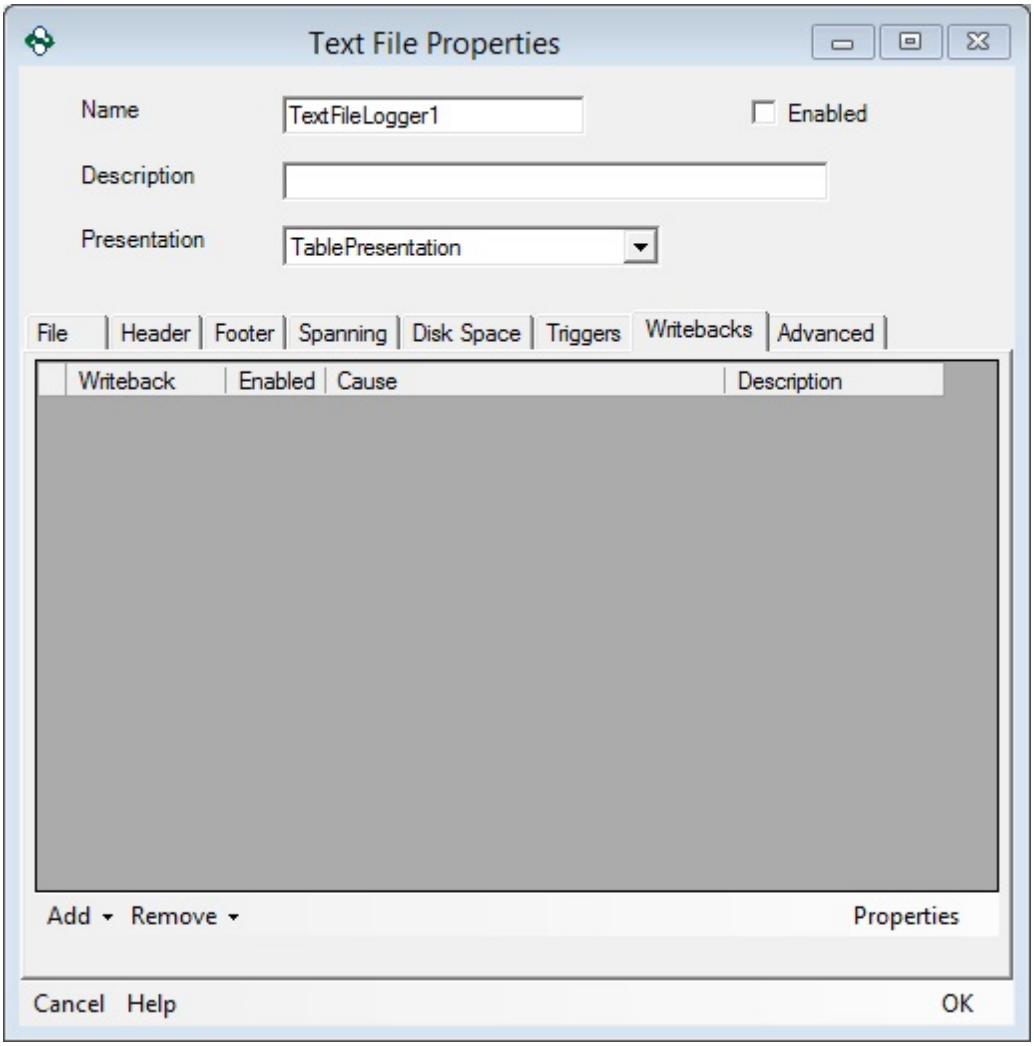

Advanced Tab

- **Close File**: When checked the text file will be closed after each log. This setting should only be enabled when logging to the text file is infrequent, to prevent the additional overhead of constant opening and closing of the file.

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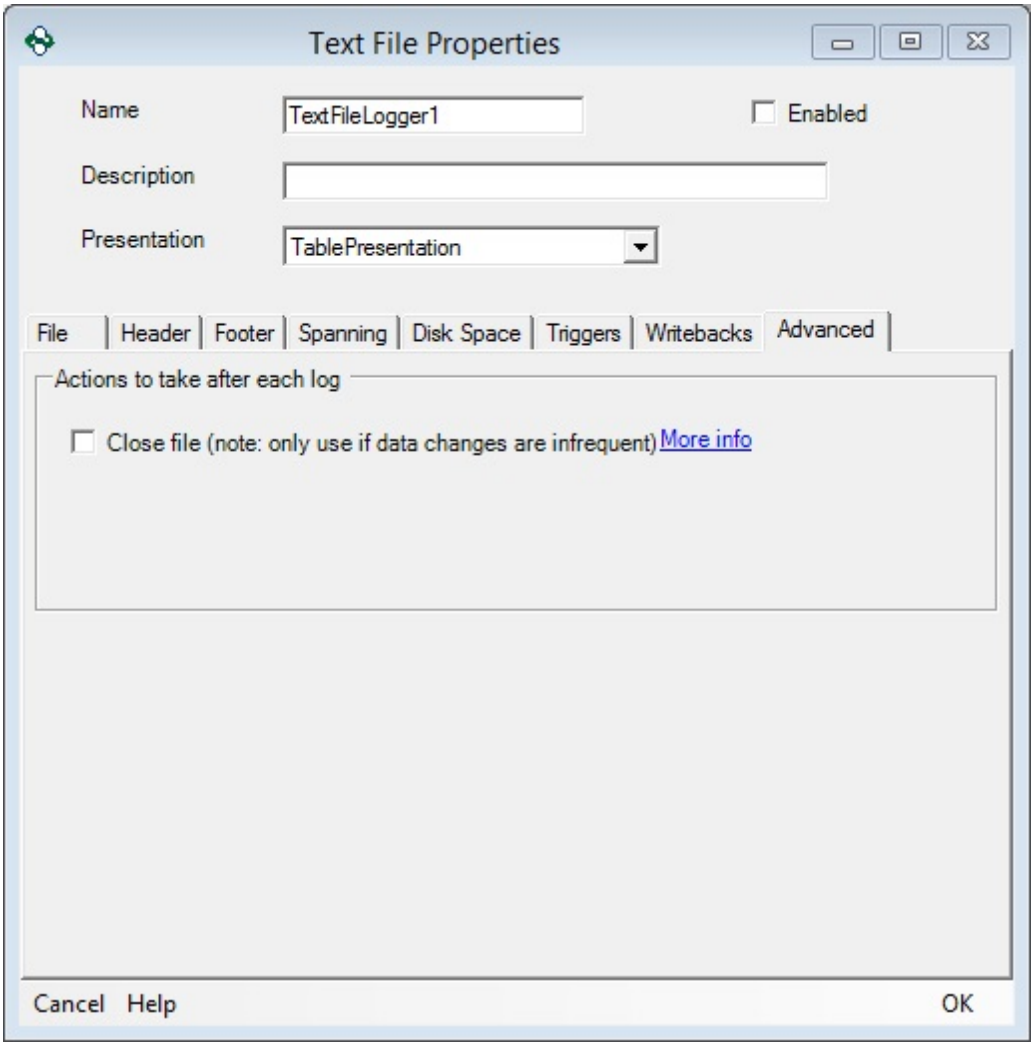

3.3.3.1.1 File Spanning

A unique feature available in Text File Data Storages is the ability to span files based on a trigger. This allows a file to be closed and a new one opened on a timer (Recurring Triggers), at a specific time/date (Scheduled Triggers), or if a certain condition is met in the Data Source (Monitored Item Trigger).

Because File spanning requires a trigger component to elicit a new file being created, it is recommended to create a Trigger before setting up File Spanning.

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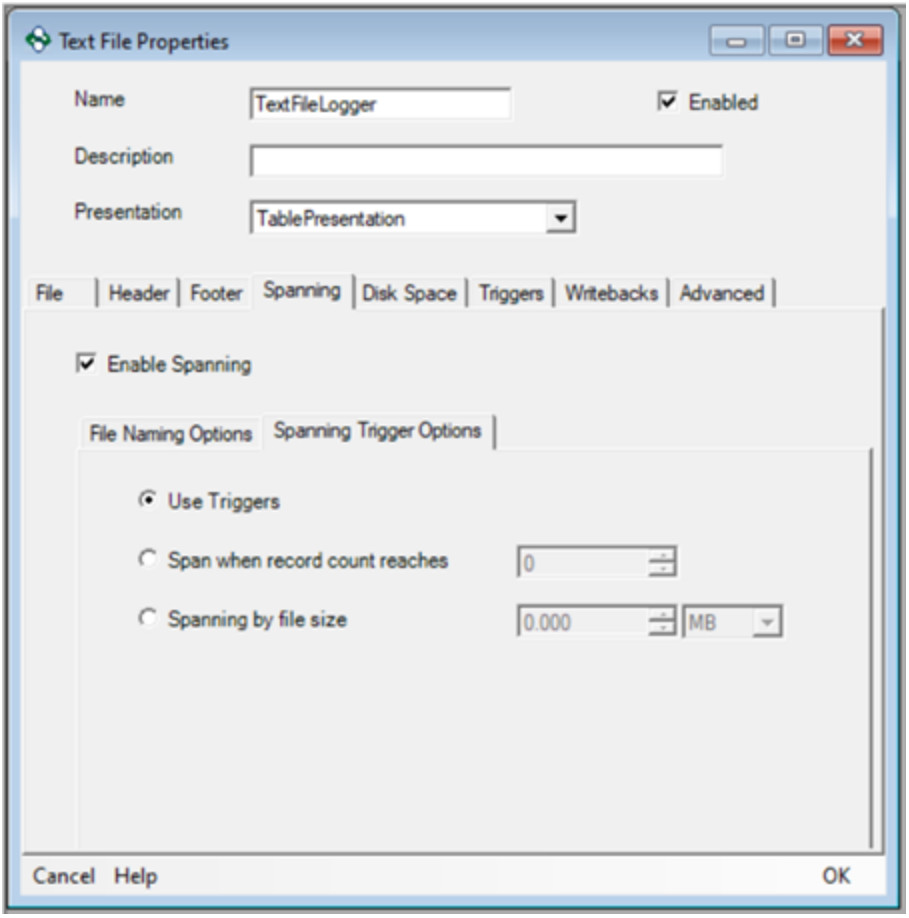
Enabling Text File Spanning

File Spanning can be enabled on the **Spanning** tab, after opening the Properties dialog of a Text File Data Storage.



Checking the **Enable Spanning** checkbox will allow a trigger to close a currently open file, and start a new one.

File Naming Options:

- Overwrite Self – Deletes the open file, and create a new file with the same name every time the trigger is raised.
- Incremental – Appends a number to the file name. The number will increment by one every time a new file is opened, and start at the specified value.

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Example: textfile_0.txt, textfile_1.txt, textfile_2.txt,…

- Date and Time – Appends the date and (optional) time to the file name. Care should be taken that the Spanning trigger does not result in files with the same name, or data may be overwritten or multiple records placed in the same file.

Example: textfile_2016_06_01.txt, textfile_2016_06_02.txt, textfile_2016_06_03.txt

- Specified Item Value – Appends the value of the specified item from the OPC Data Source to the file name, every time the file is spanned. If a new file must be created every time the file spans, care must be taken that the OPC Item value does not repeat.

Example: textfile_PlcTagValue1.txt, textfile_PlcTagValue2.txt, txtfile_PlcTagValue3.txt

- Prepend specified value: When checked, the OPC Data Logger will append the selected value to the beginning of the file name. The default setting will place the value at the end.

Spanning Trigger Options:

- Use Triggers: Enable to use trigger type (Scheduled, Reoccurring or Monitored Item)
- Span when record count reaches: When enabled, set max record count value to trigger the file span. When file count matches set value, the file will span.
- Spanning by file size: Sets max file size to trigger the file to span. When file size matches set value, the file will span.

Triggering a File Spanning Event

Once File spanning has been enabled, a trigger must be added to the Text File Logger to prompt the File Spanning event to occur. Use the **Add** button under the **Triggers** tab of the Properties window to select the appropriate triggers from the list of triggers available in the OPC Data Logger Global Components.

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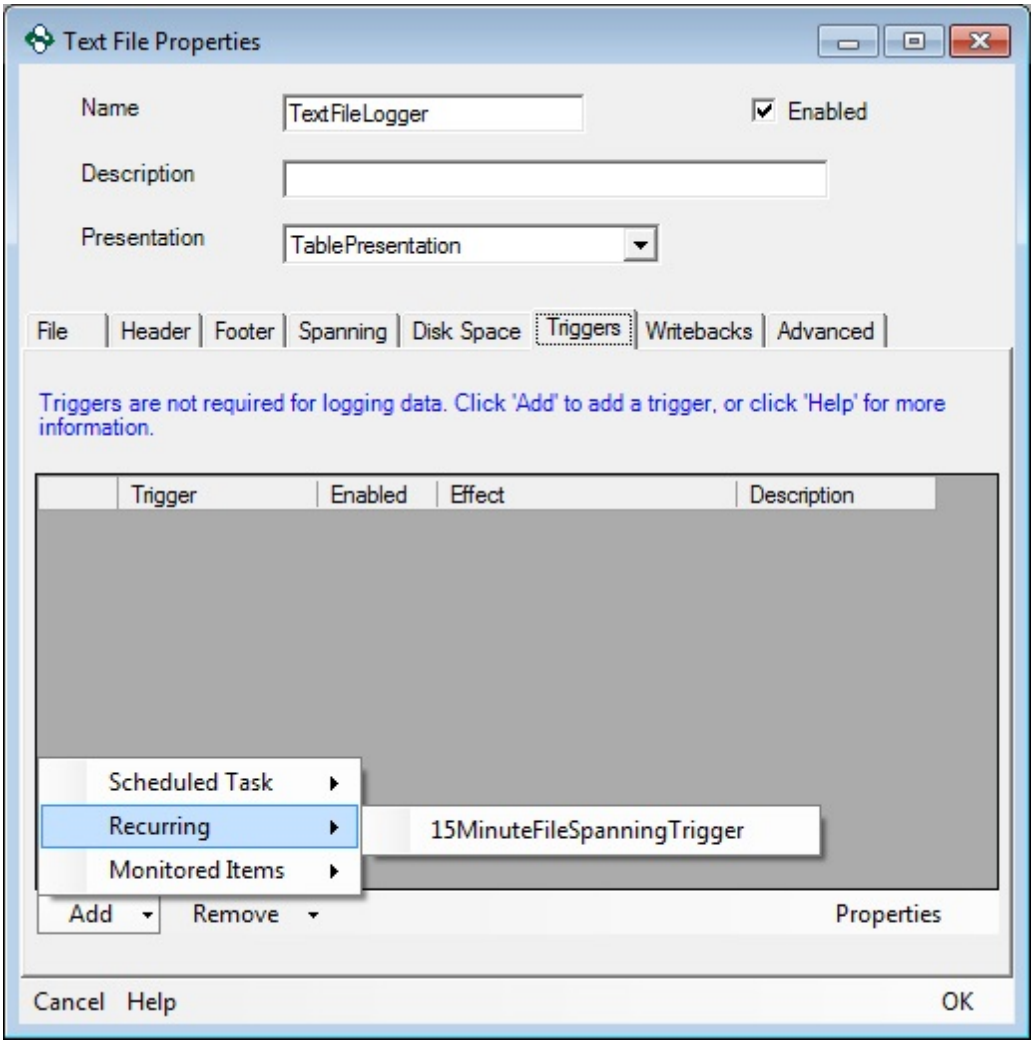

Once the trigger has been added to the Text File Logger, verify that the Enabled Checkbox is checked, and set the appropriate Effect:

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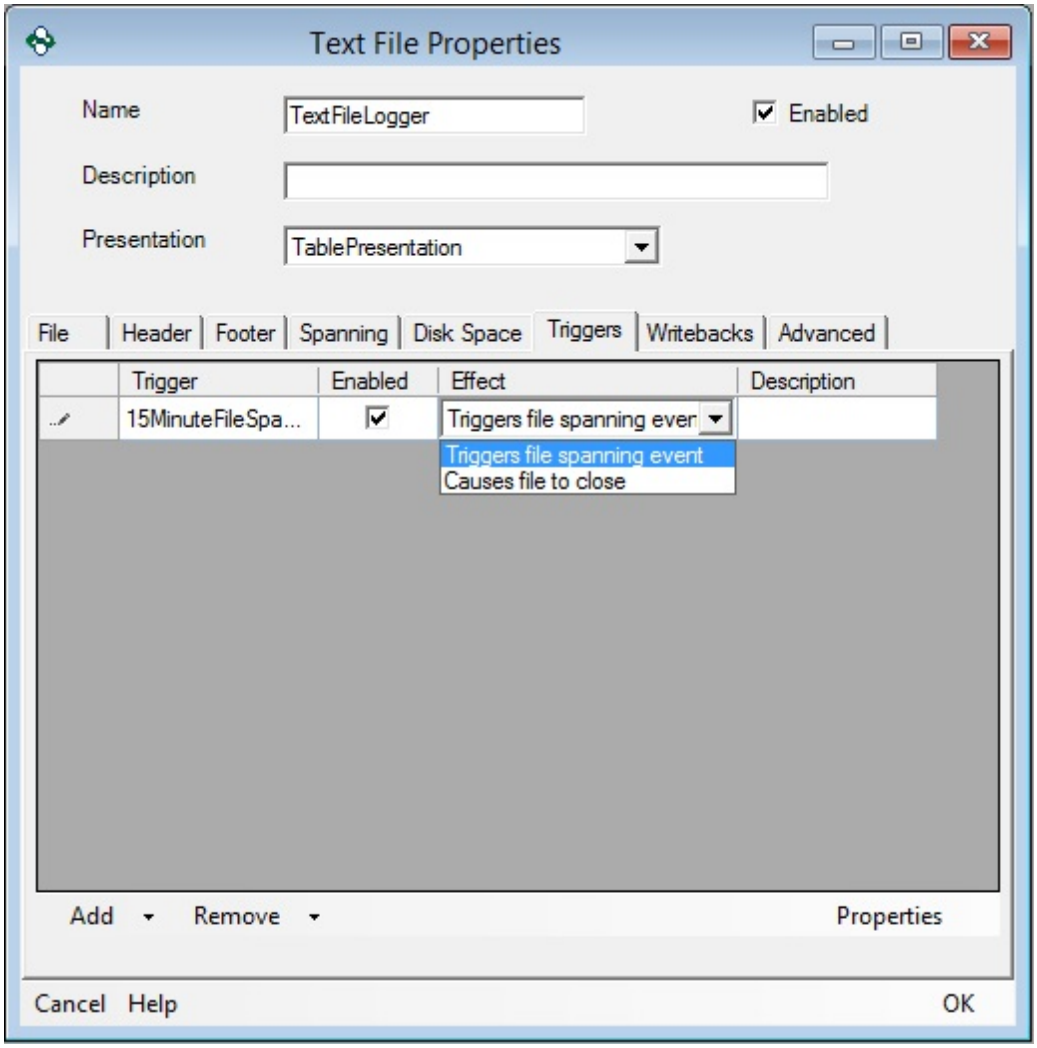

Effects:

- **Triggers file spanning event**: Whenever the Trigger fires the current file will be closed and a new file will be opened. The new file will be named according to the selected naming options on the **Spanning Tab**.
- **Causes file to close**: Whenever the Trigger fires the current file will be closed, but a new file will not automatically be opened.

3.3.3.2 Database Logging

When creating a new OPC Data Logger Data Storage component, the following database mediums are supported:

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- Microsoft SQL Server
- Microsoft Access
- MySQL
- ODBC Compliant

Due to the similarities between the storage methods for the supported database types, the OPC Data Logger configuration for each database is very similar. However, the OPC Data Logger uses optimized drivers for each type of database, so a few differences will be noted.

Database Configuration

Before logging data to a database data storage, the connection settings for the data base must be configured. These include the type of database, where the database is located, and the required authentication settings need to connect to the database.

Data Storage and Logging

Once the connection to the database has been configured and tested, the method of logging must be selected. The OPC Data Logger supports two methods of data insertion:

- **Stored Procedures (*preferred*)** – Offers the best performance since the stored procedures are pre-compiled.
- **Direct Table Injection** – The OPC Data Logger will send raw injection statements to the database to log the data. This method is slower than stored procedures, but *can* be easier to configure as it does not require and database scripting experience.

While Stored Procedures must already exist in the database in order for the OPC Data Logger to be able to access them, tables – for direct injection – can be created during the configuration of the Data Storage Component.

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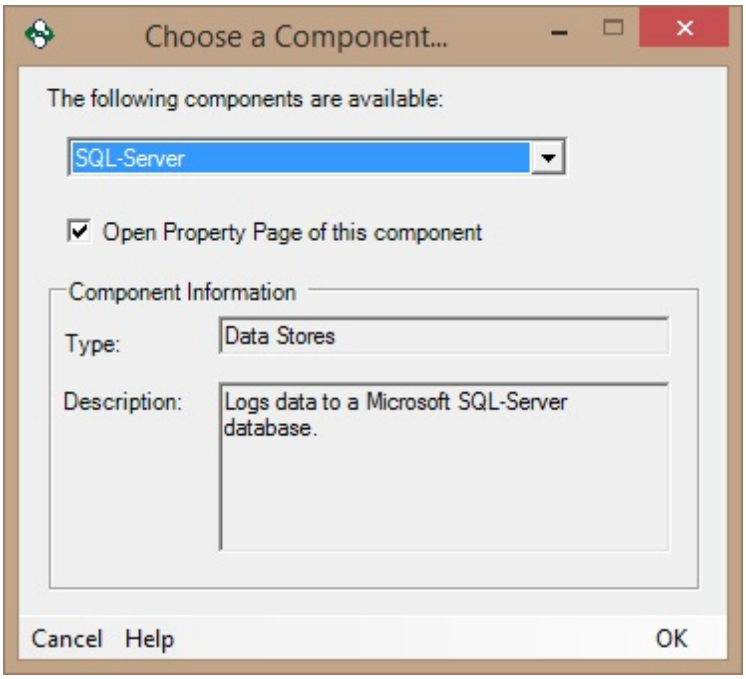
Data Buffering

In case the OPC Data Logger loses the connection to the Database, data will be buffered and OPC Data Logger will continuously try to re-establish the connection. Once the connection to the database has been re-established, the buffered data will be logged before new data is inserted. The maximum buffer size can be altered via the *InternalBufferSize* setting in the OPC Data Logger Options.

3.3.3.2.1 SQL Server

In order to add a SQL Server Data Storage to the OPC Data Logger configuration right click on the Data Storage Global Component, and use the **Add** button to add a new Data Storage. This section will describe all available properties when a SQL-Server component is used as the Data Storage medium, and how to



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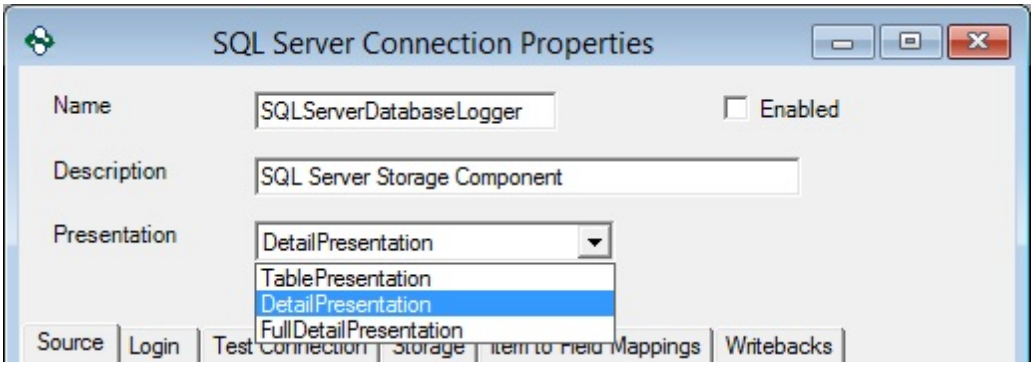
General Properties

- **Name**: A unique name that identifies the component – this will be how the SQL Data Storage appears in the tree view, and how other components reference the Data Storage.
- **Description**: Optional description of the Data Store
- **Presentation**: The Data Presentation that will be used to store data in the SQL Database. This drop down will show a list of all Data Presentation available in the OPC Data Logger configuration.
- **Enabled**: When checked the SQL Server Data Storage is active and available for use by logging tasks. When unchecked no data will be stored to the SQL Database through this component.



Source Properties

The Source properties determine where the SQL Server Database is located that the OPC Data Logger will attempt to connect to.

- **Computer**: Specifies the Name or IP Address of the machine where the SQL Database is located. For a local connection the loopback (127.0.0.1) address should be used.
- **Database Name**: The name of an existing SQL Server database, where the data should be logged.

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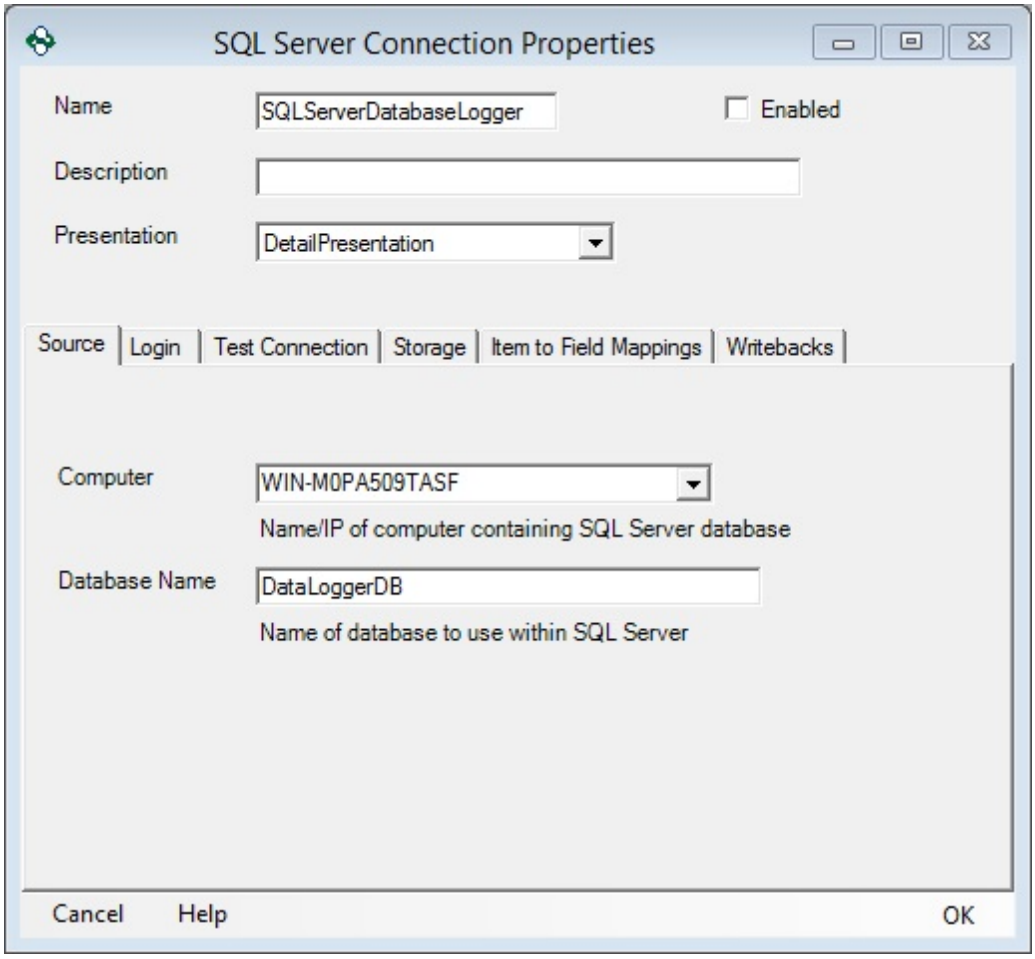

Login Properties

The Login Properties determine how the OPC Data Logger will authenticate when connecting to the SQL Server Database.

- **Integrated Security**: Uses the Windows user credentials to authenticate with the SQL Server
- **Database Login**: Uses the specified User Name and Password to authenticate with the SQL Server
- **Does not require Login credentials**: Should be used when the SQL Server does not require any form of authentication

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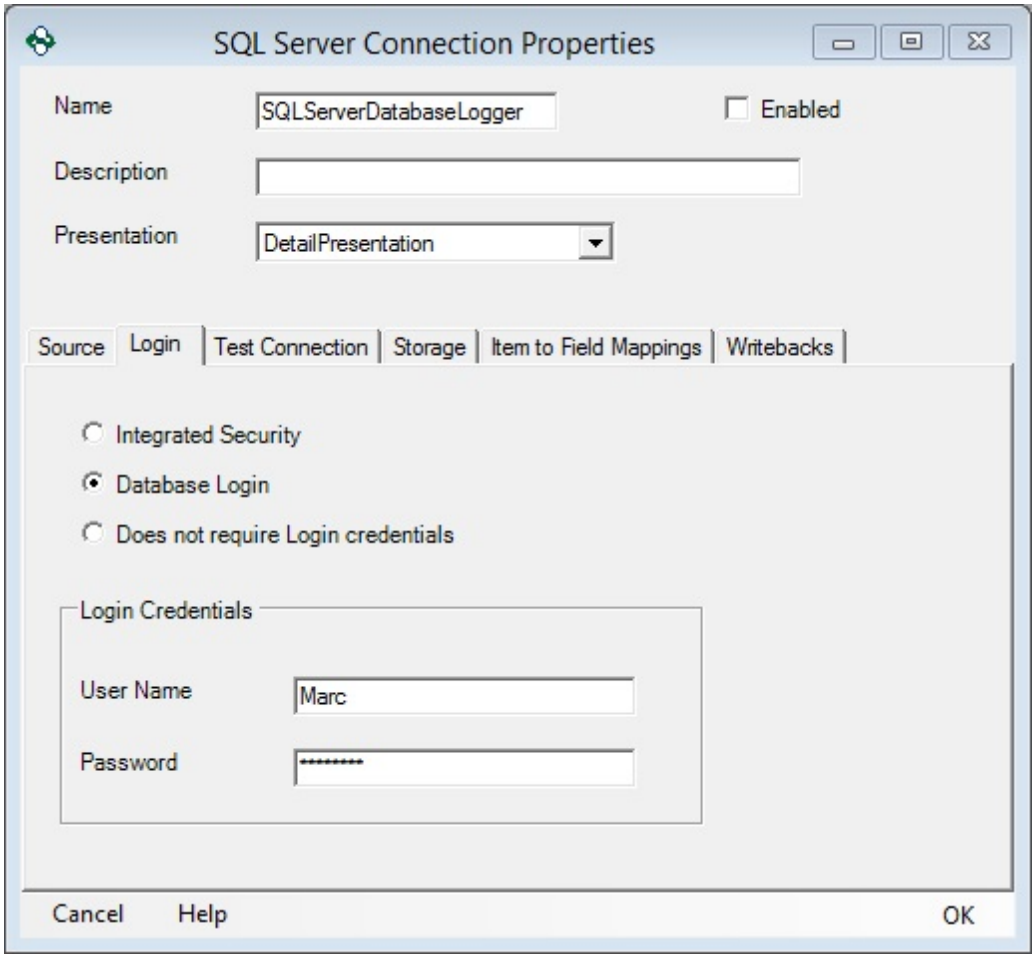

Test Connection Properties

- **Test Connection**: Will attempt to connect to the SQL Server Database on the Computer specified in the Source Properties, using the authentication settings configured on the Login tab – this test MUST indicate a successful connection before the rest of the SQL Server Data Storage can be configured.

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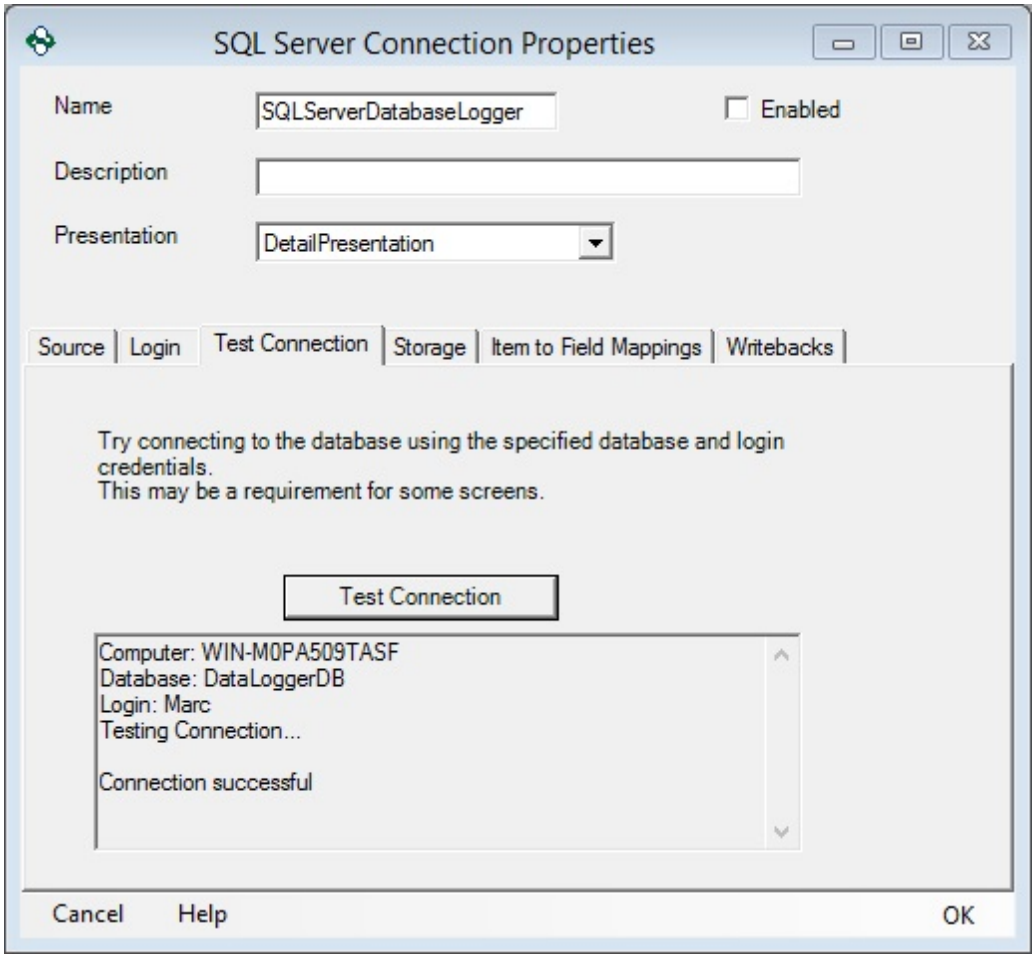

Storage Properties

The storage properties determine the method by which data will be inserted into the SQL Server Database.

- **Stored Procedure**: This drop down will populate with a list of all stored procedures available in the specified database.
- **Data Logger Managed (SQL)**: The drop down will populate with a list of all tables that currently exist in the database.
- **Refresh**: Refreshes the drop-down menus.
- **Table Builder**: Will create a new Table in the specified database. For more information on building a new table, refer to the Table Builder section of the help file.

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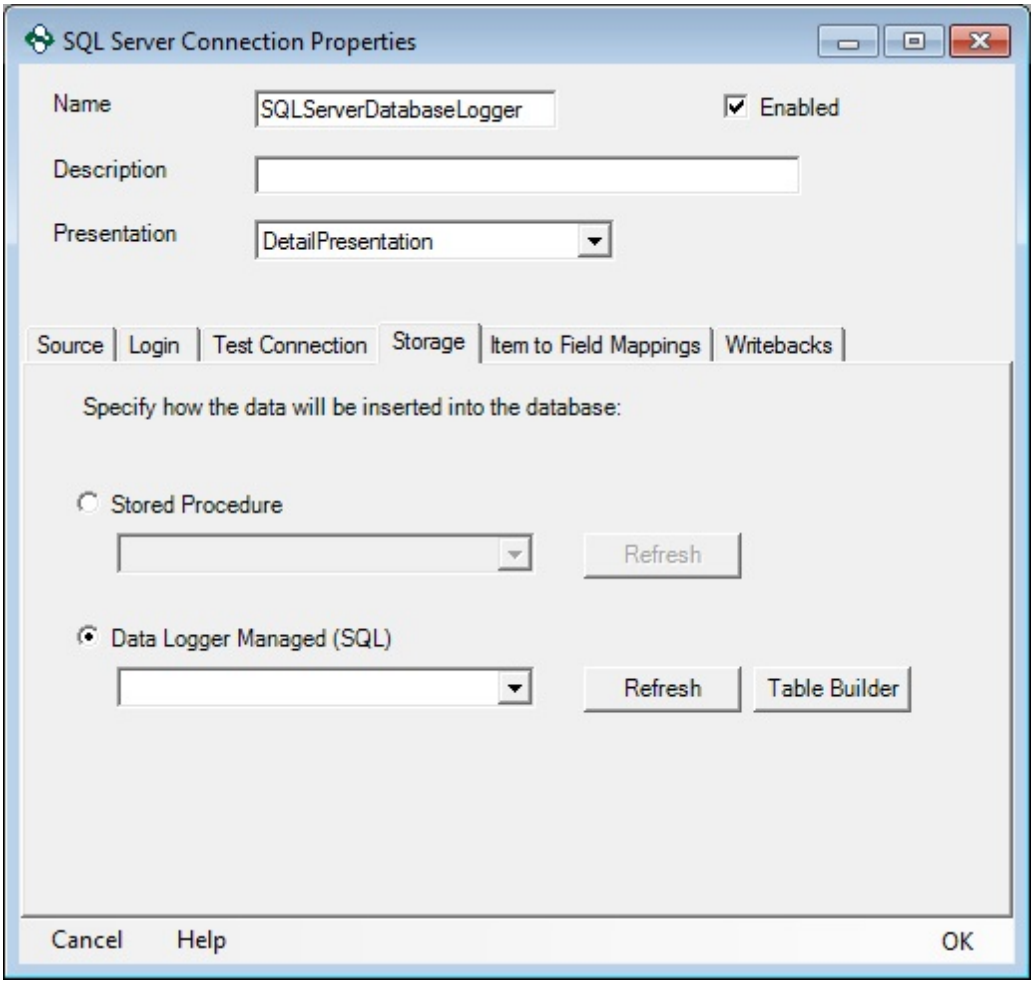

Item to Field Mapping Properties – Detail Presentation Mode

Convert Non Normalised Values to NULL: When checked, non-normalised floating point values will be logged as NULL rather than their non-normalised value (1.#NAN, 1.#INF, etc).

Use 1/0 for Booleans: When checked all Boolean values will be logged as 0 (low) or 1 (high) instead of FALSE (low) and TRUE (high)

Field Name: Lists the Column name that will be used in the database.

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Field Type: Lists the data type associated with the column in the database.

Item Attribute: Lists the attribute from the Detail presentation that is associated to this column.

Attribute Type: Lists the Data Type associated with the attribute that will be logged to this column.

Convert: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked unless the Field and Attribute Types are different.

Reset: Resets all Field Name mapping.

Auto Fill: Will fill out the database fields in the order that they are defined in the table.

Validate: Checks for conflicts between the OPC Data Logger mappings and the database structure.

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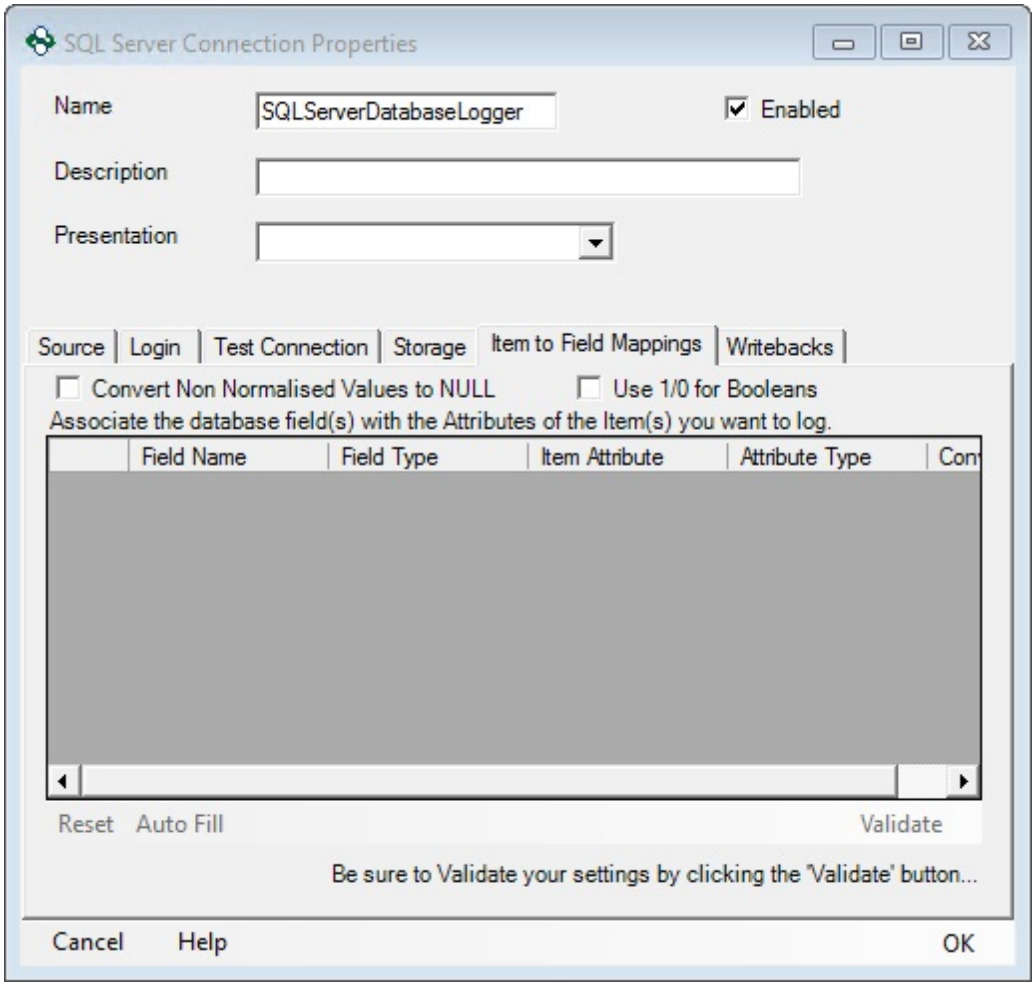

Item to Field Mapping Properties – Table Presentation Mode

Convert Non Normalised Values to NULL: When checked, non-normalised floating point values will be logged as NULL rather than their non-normalised value (1.#NAN, 1.#INF, etc).

Use 1/0 for Booleans: When checked all Boolean values will be logged as 0 (low) or 1 (high) instead of FALSE (low) and TRUE (high)

Field Name: Lists the Column name that will be used in the database.

Field Type: Lists the data type associated with the column in the database.

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Item Attribute: Lists the attribute from the Table presentation that is associated to this column. This value should be set to Value for all entries with the exception of *Timestamp*.

Item ID: Lists the items in the order they exist in the Table Presentation.

Attribute Type: Lists the Data Type associated with the attribute that will be logged to this column.

Convert: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked unless the Field and Attribute Types are different.

Reset: Resets all Field Name mapping.

Auto Fill: Will fill out the database fields in the order that they are defined in the table.

Validate: Checks for conflicts between the OPC Data Logger mappings and the database structure.

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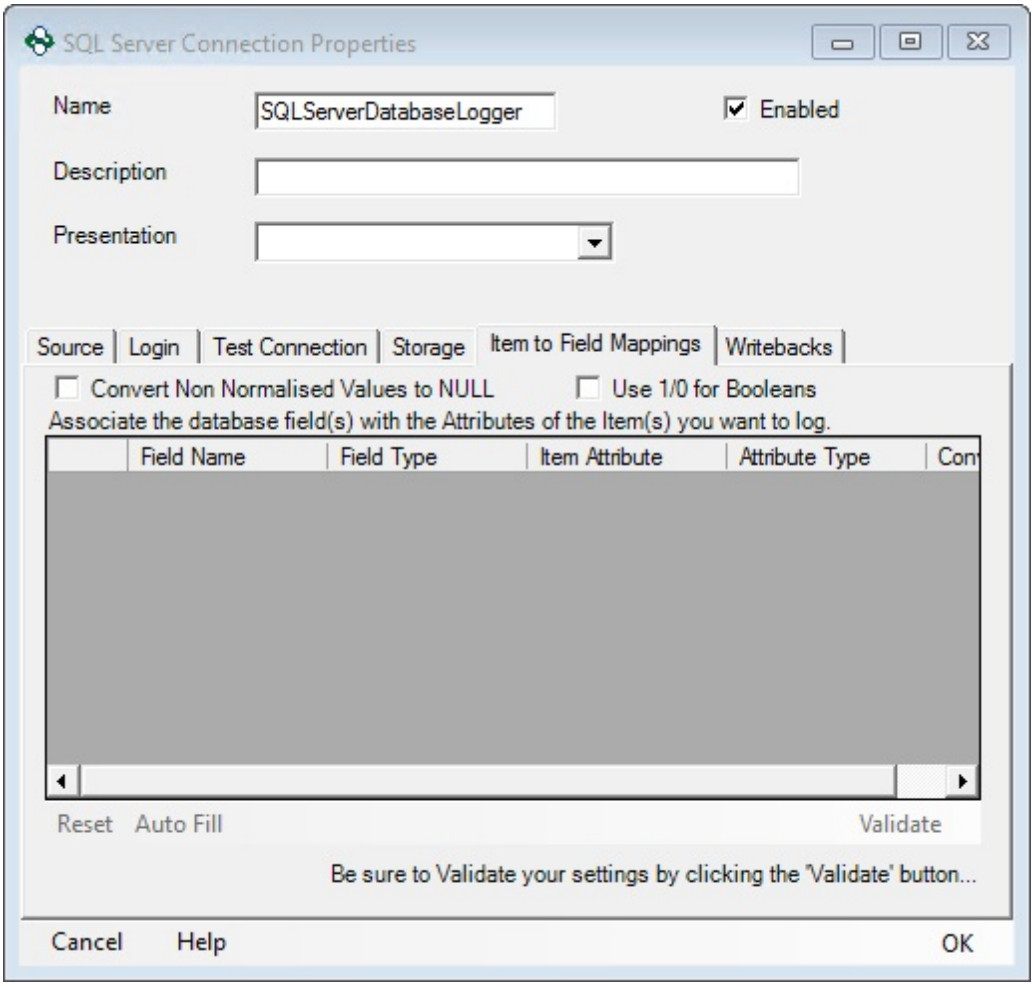

Writeback Properties

For information on configuring a Database Writeback, refer to the Writebacks with Databases section of the help file.

3.3.3.2.2 Microsoft Access

In order to add an Access Data Storage to the OPC Data Logger configuration right click on the Data Storage Global Component, and use the **Add** button to add a new Data Storage. This section will describe all available properties when an Access Data Storage component is used as the Data Storage medium, and how to configure a connection to an Access Database.

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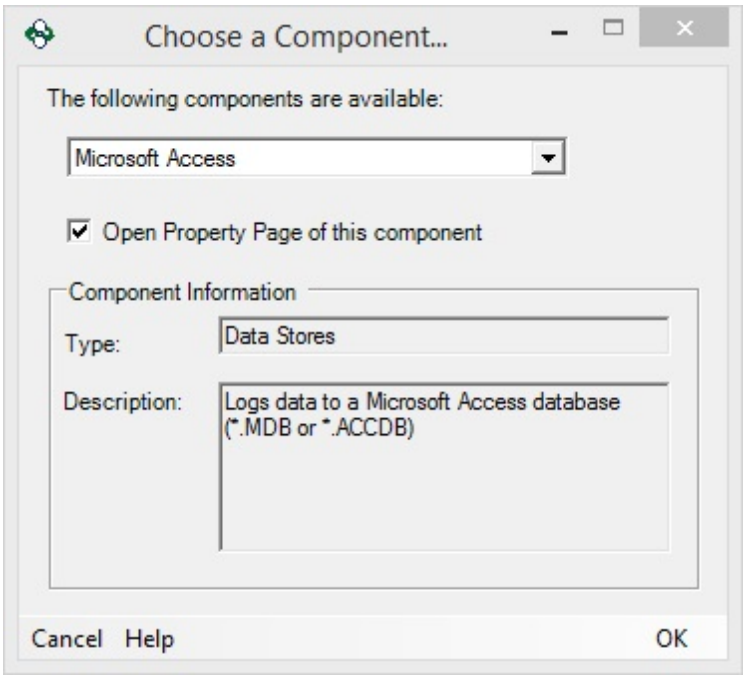

General Properties

- **Name**: A unique name that identifies the component – this will be how the Access Data Storage appears in the tree view, and how other components reference the Data Storage.
- **Description**: Optional description of the Data Store
- **Presentation**: The Data Presentation that will be used to store data in the Access Database. This drop down will show a list of all Data Presentation available in the OPC Data Logger configuration.
- **Enabled**: When checked the Access Data Storage is active and available for use by logging tasks. When unchecked no data will be stored to the Access Database through this component.

Source Properties

The Source properties determine what Access Database the OPC Data Logger will attempt to connect to.

- **Filename**: Specifies the location of the Access Database. This file must exist before adding the filename to the OPC Data Logger – it will not be created.

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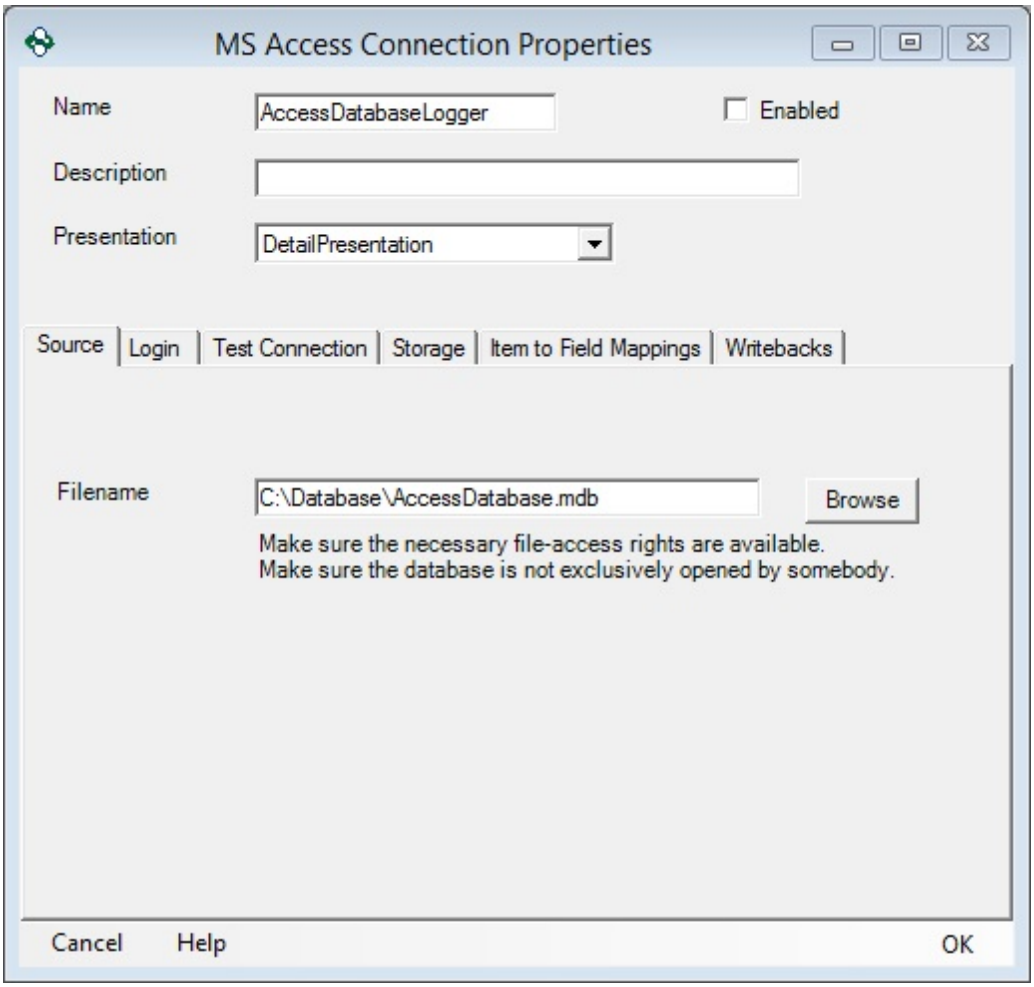

Login Properties

The Login Properties determine how the OPC Data Logger will authenticate when connecting to the Access Database.

- **Does not require Login credentials**: Should be used when the Access does not require any form of authentication
- **Database Login**: Uses the specified *User Name* and *Password* to authenticate with the Access Database

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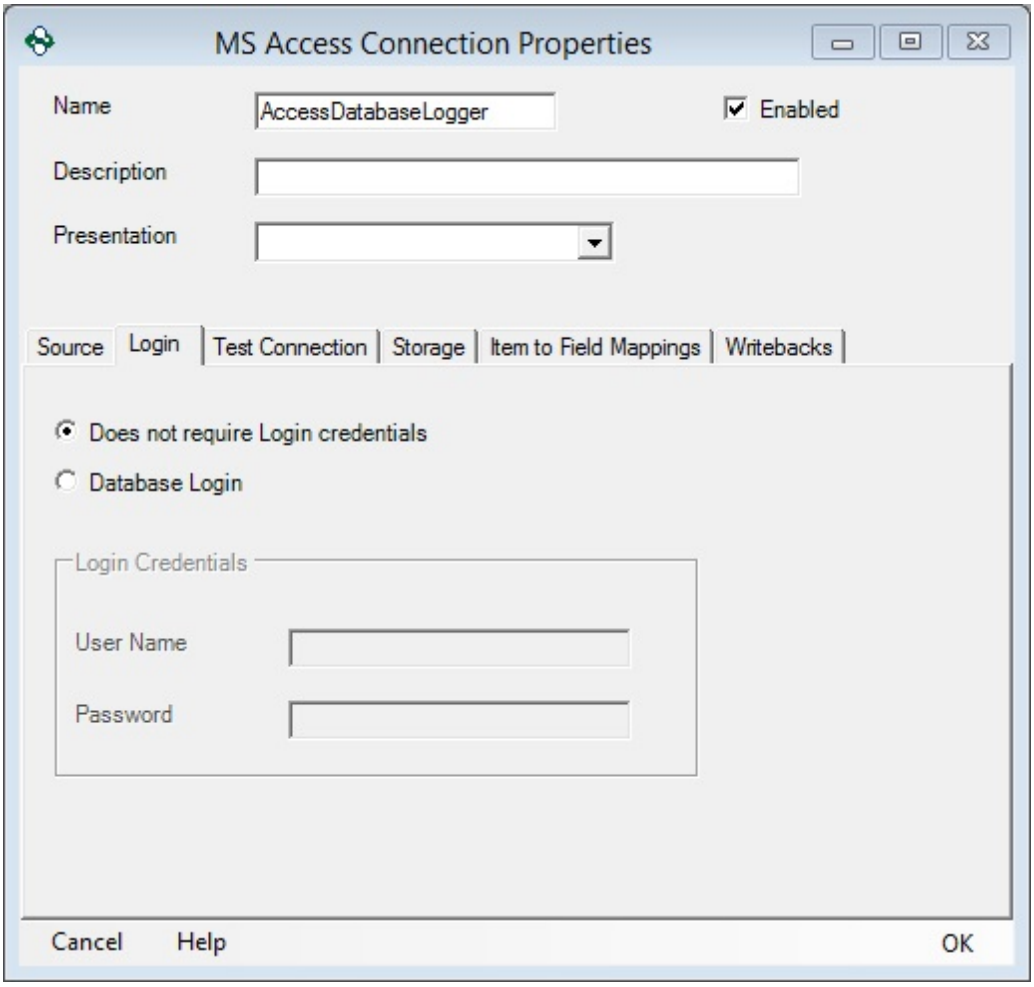

Test Connection Properties

- **Test Connection**: Will attempt to connect to the Access Database on the Computer specified in the Source Properties, using the authentication settings configured on the Login tab – this test MUST indicate a successful connection before the rest of the Access Data Storage can be configured.

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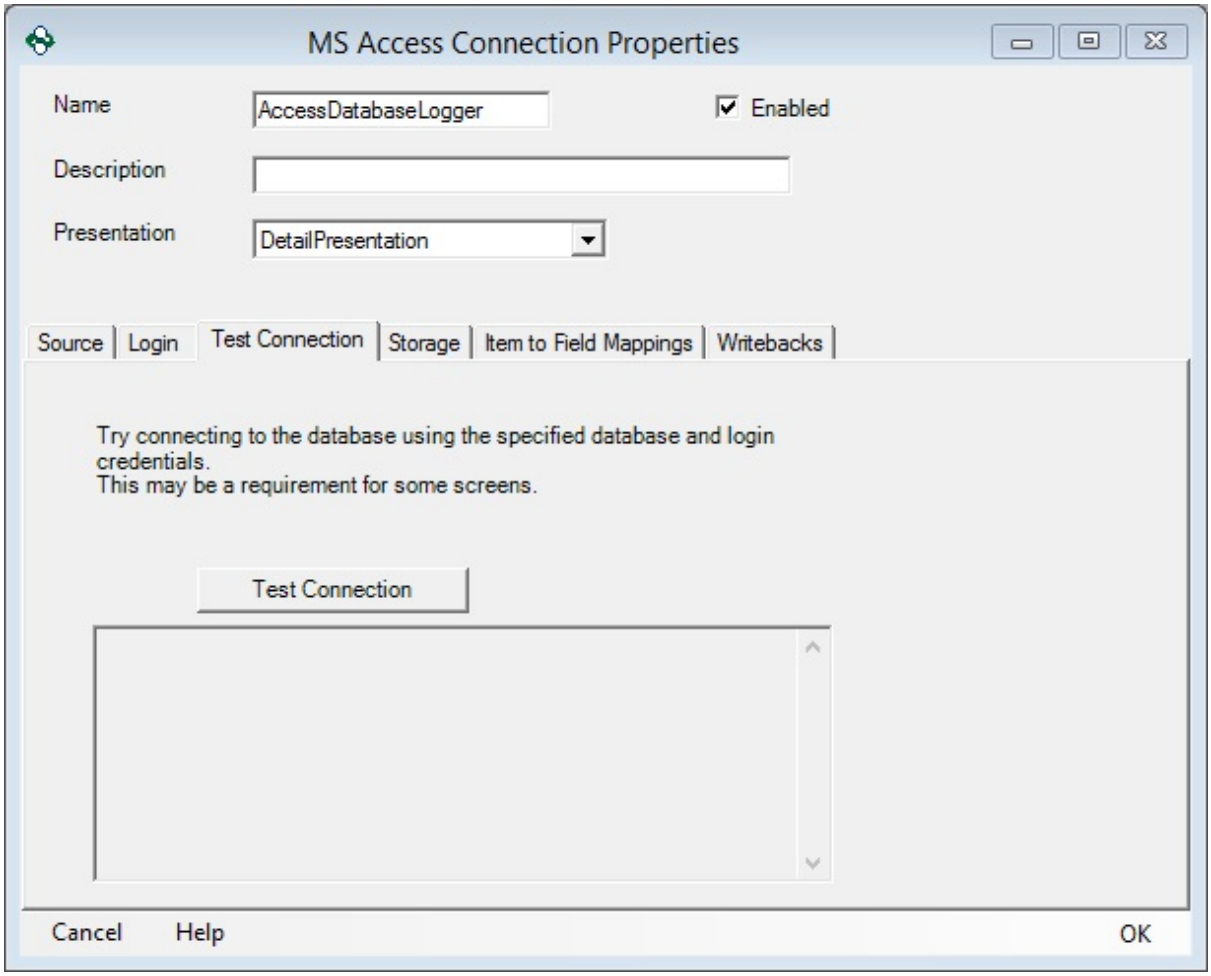

Storage Properties

The storage properties determine the method by which data will be inserted into the Access Database.

- **Stored Procedure**: This drop down will populate with a list of all stored procedures available in the specified database.
- **Data Logger Managed (SQL)**: The drop down will populate with a list of all tables that currently exist in the database.
- **Refresh**: Refreshes the drop-down menus.
- **Table Builder**: Will create a new Table in the specified database. For more information on building a new table, refer to the Table Builder section of the help file.

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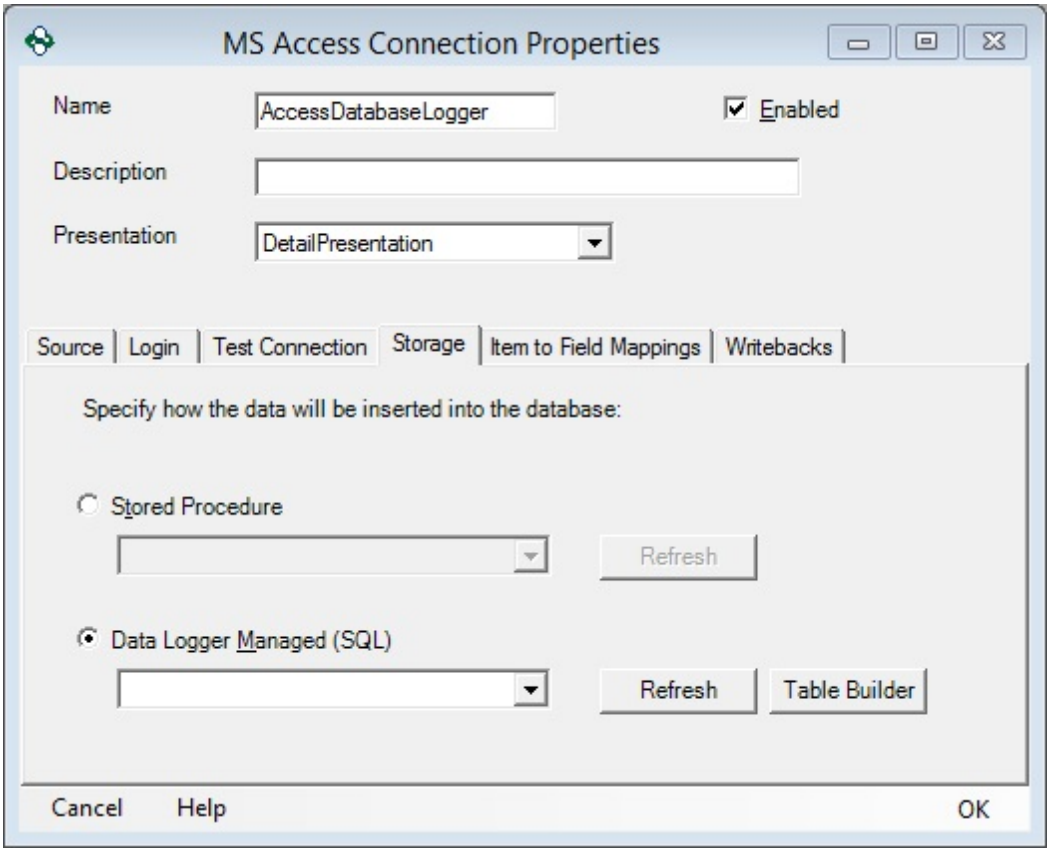

Item to Field Mapping Properties – Detail Presentation Mode

- **Field Name**: Lists the Column name that will be used in the database.
- **Field Type**: Lists the data type associated with the column in the database.
- **Item Attribute**: Lists the attribute from the Detail presentation that is associated to this column.
- **Attribute Type**: Lists the Data Type associated with the attribute that will be logged to this column.
- **Convert**: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked *unless* the Field and Attribute Types are different.
- **Reset**: Resets all Field Name mapping.
- **Auto Fill**: Will fill out the database fields in the order that they are defined in the table.

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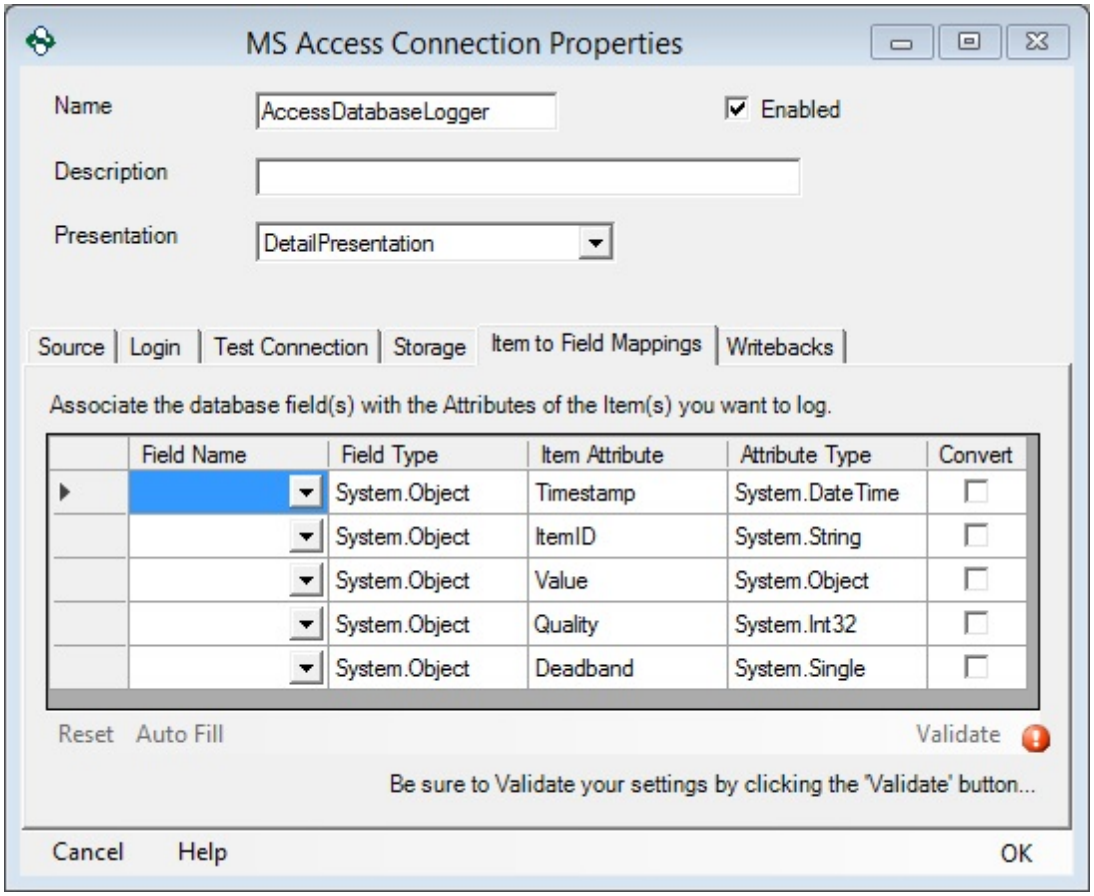
- **Validate**: Checks for conflicts between the OPC Data Logger mappings and the database structure.



Item to Field Mapping Properties – Table Presentation Mode

- **Field Name**: Lists the Column name that will be used in the database.
- **Field Type**: Lists the data type associated with the column in the database.
- **Item Attribute**: Lists the attribute from the Table presentation that is associated to this column. This value should be set to Value for all entries with the exception of *Timestamp*.
- **Item ID**: Lists the items in the order they exist in the Table Presentation.

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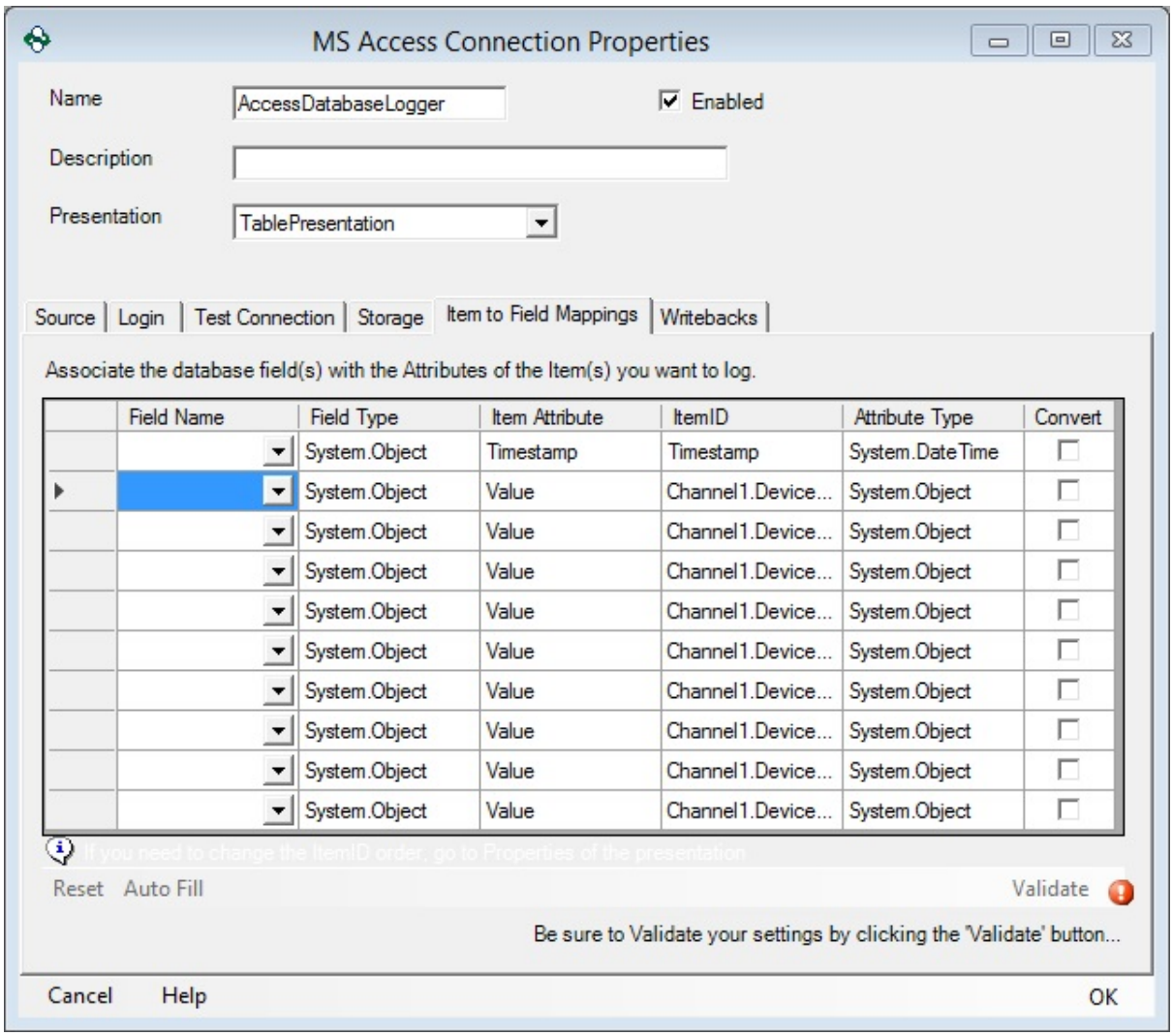
- **Attribute Type**: Lists the Data Type associated with the attribute that will be logged to this column.
- **Convert**: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked unless the Field and Attribute Types are different.
- **Reset**: Resets all Field Name mapping.
- **Auto Fill**: Will fill out the database fields in the order that they are defined in the table.
- **Validate**: Checks for conflicts between the OPC Data Logger mappings and the database structure.



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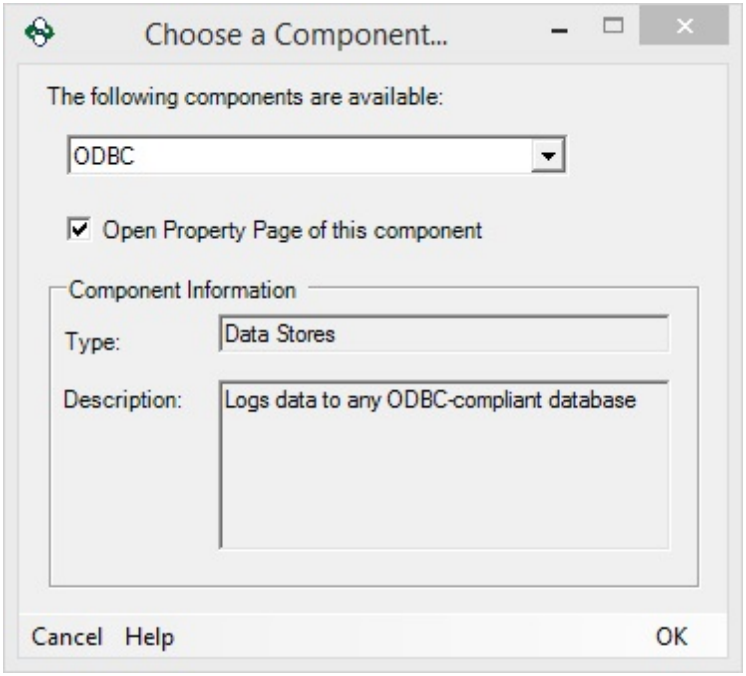
Writeback Properties

For information on configuring a Database Writeback, refer to the Writebacks with Databases section of the help file.

3.3.3.2.3 ODBC

In order to add an ODBC Data Storage to the OPC Data Logger configuration right click on the Data Storage Global Component, and use the **Add** button to add a new Data Storage. This section will describe all available properties when an ODBC component is used as the Data Storage medium, and how to configure a connection to an ODBC data store.



General Properties

- Name: A unique name that identifies the component – this will be how the ODBC Storage appears in the tree view, and how other components reference the Data Storage.

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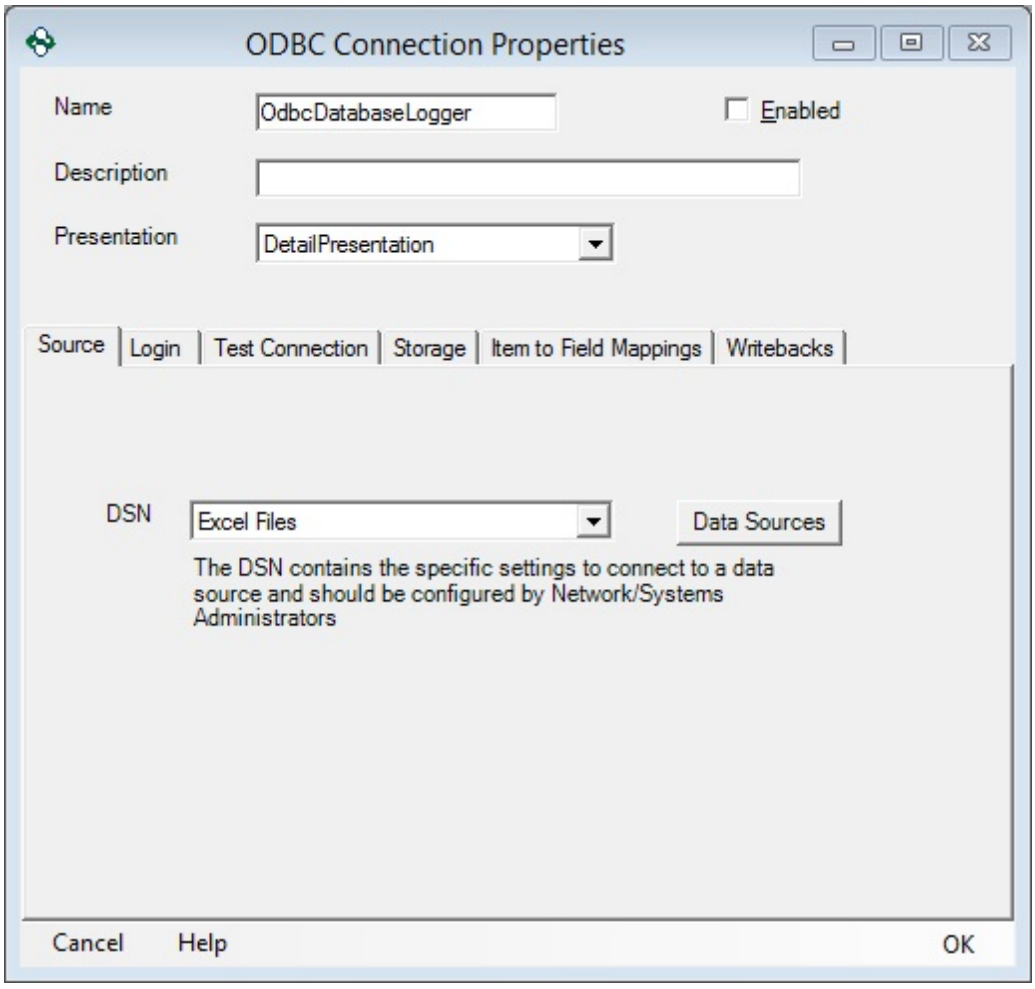
- Description: Optional description of the Data Store
- Presentation: The Data Presentation that will be used to store data in the ODBC data store. This drop down will show a list of all Data Presentation available in the OPC Data Logger configuration.
- Enabled: When checked the ODBC Data Storage is active and available for use by logging tasks. When unchecked no data will be stored to the ODBC data store through this component.

Source Properties

- **DSN**: The drop down lists all DSNs that have been configured with the ODBC Data Source Administrator. A DSN must be selected from this list.



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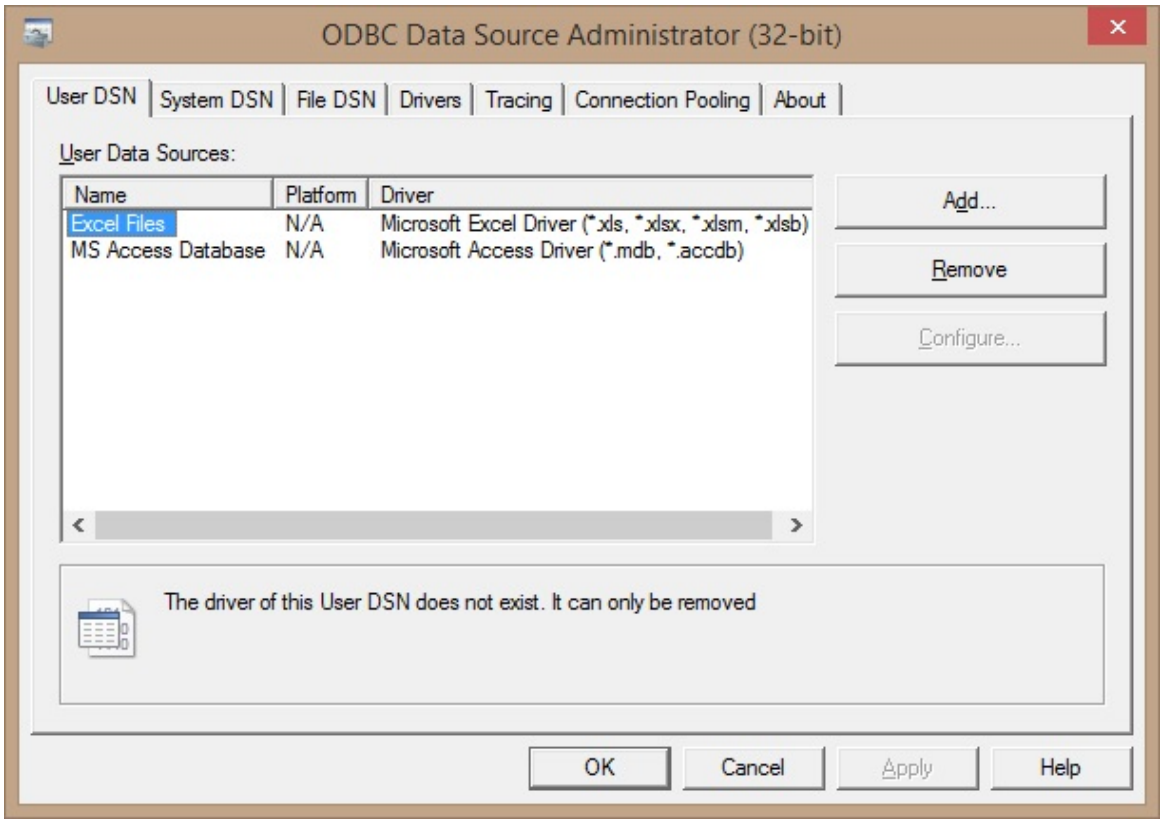
- **Data Sources**: Opens the ODBC Data Source Administrator in order to configure a new ODBC DSN.



Login Properties

The Login Properties determine how the OPC Data Logger will authenticate when connecting to the ODBC database.

- **Does not require Login credentials**: Should be used when the ODBC data store does not require any form of authentication
- **Database Login**: Uses the specified *User Name* and *Password* to authenticate with the ODBC database

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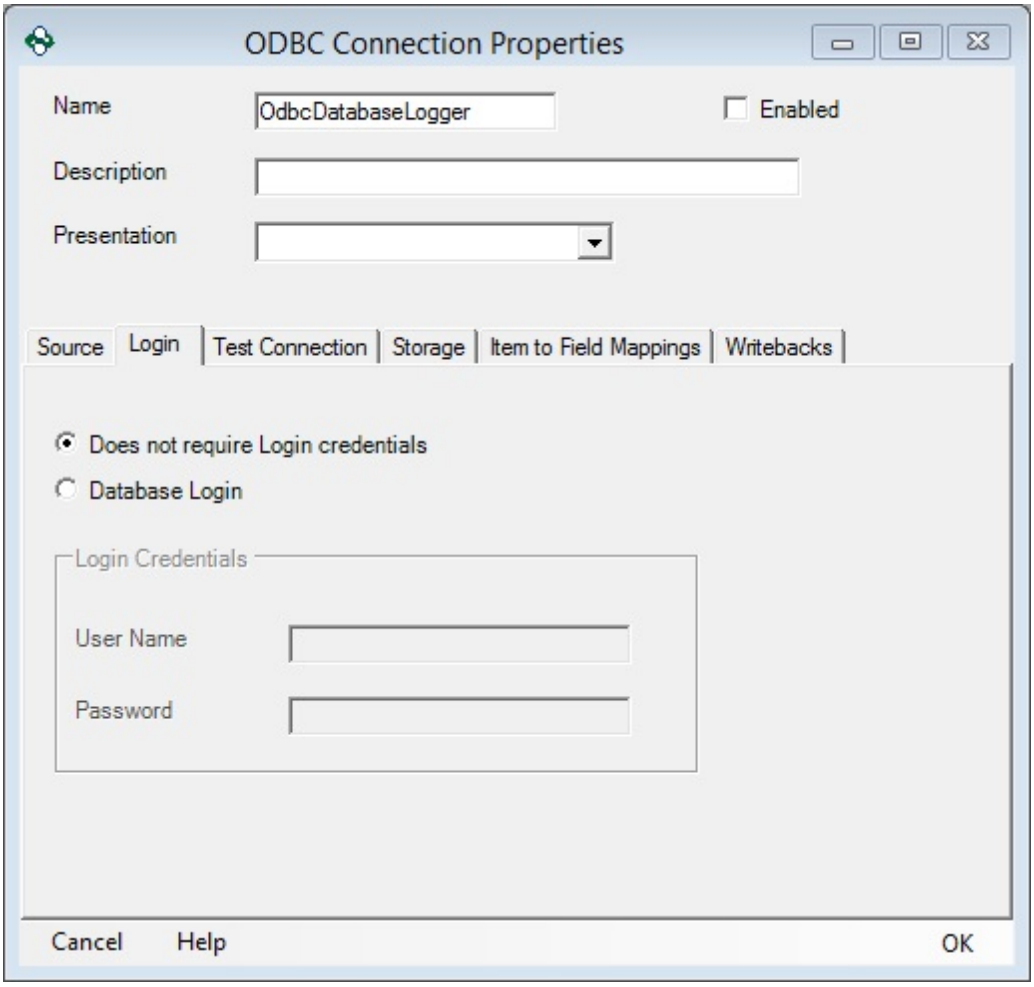

Test Connection Properties

- **Test Connection**: Tests the connection to the database. This is not required for ODBC databases but is recommended if using login credentials.

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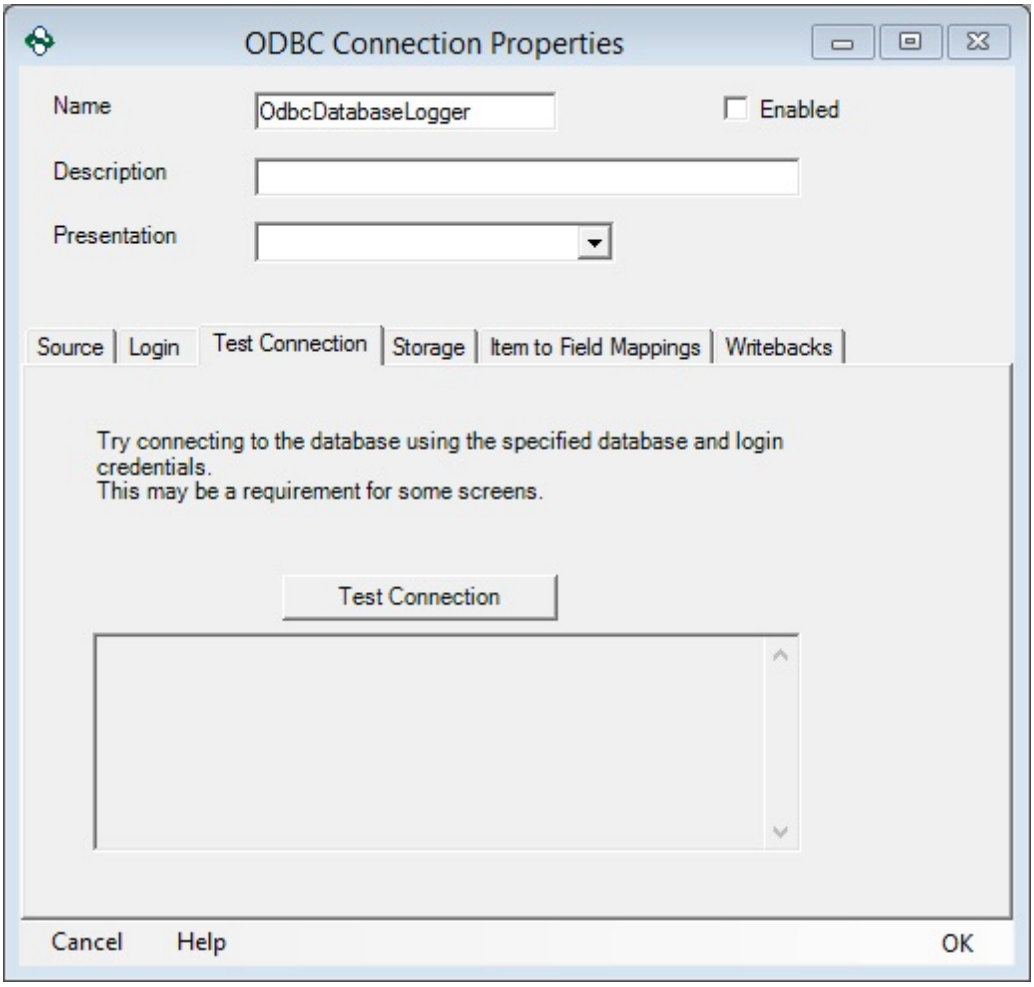

Storage Properties

The storage properties determine the method by which data will be inserted into the ODBC Server Database.

- **Stored Procedure**: This drop down will populate with a list of all stored procedures available in the specified database.
- **Data Logger Managed (SQL)**: The drop down will populate with a list of all tables that currently exist in the database.
- **Refresh**: Refreshes the drop-down menus.
- **Table Builder**: Will create a new Table in the specified database. For more information on building a new table, refer to the Table Builder section of the help file.

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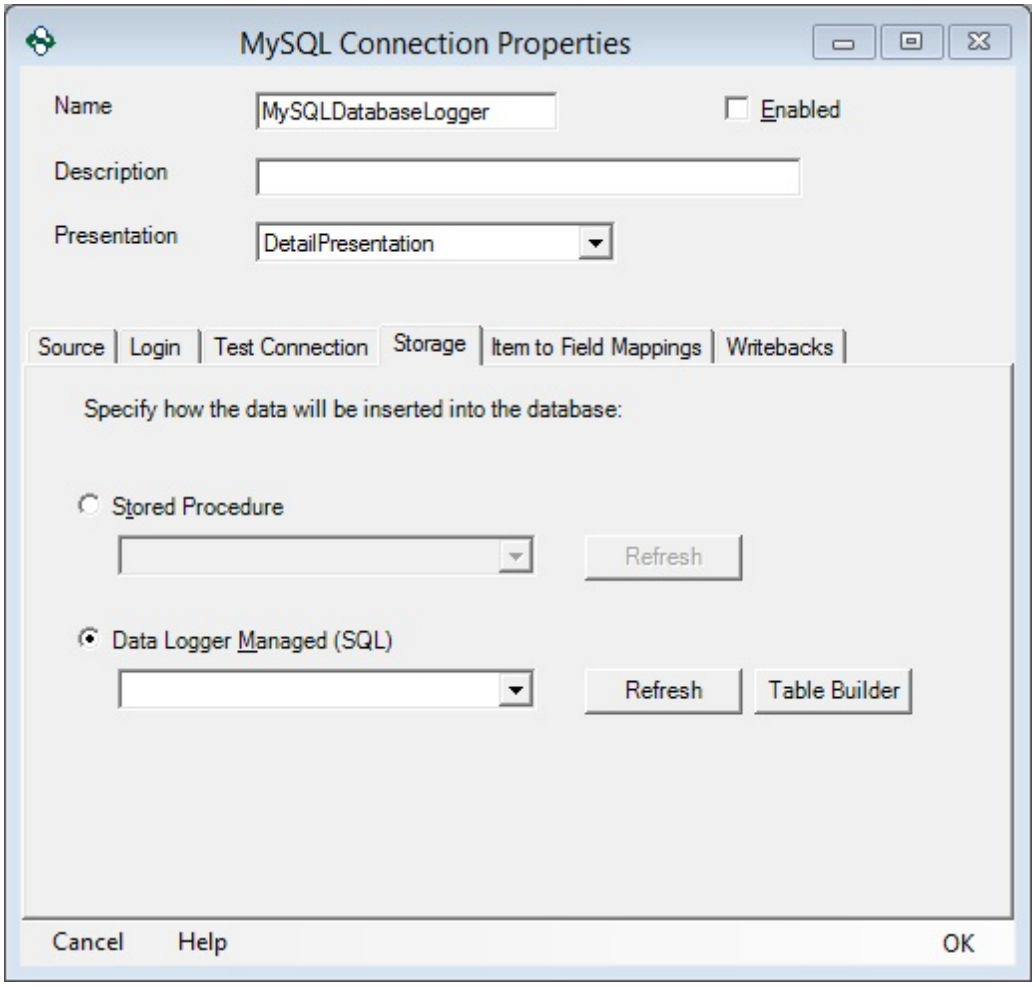

Item to Field Mapping Properties – Detail Presentation Mode

- **Field Name**: Lists the Column name that will be used in the database.
- **Field Type**: Lists the data type associated with the column in the database.
- **Item Attribute**: Lists the attribute from the Detail presentation that is associated to this column.
- **Attribute Type**: Lists the Data Type associated with the attribute that will be logged to this column.
- **Convert**: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked *unless* the Field and Attribute Types are different.

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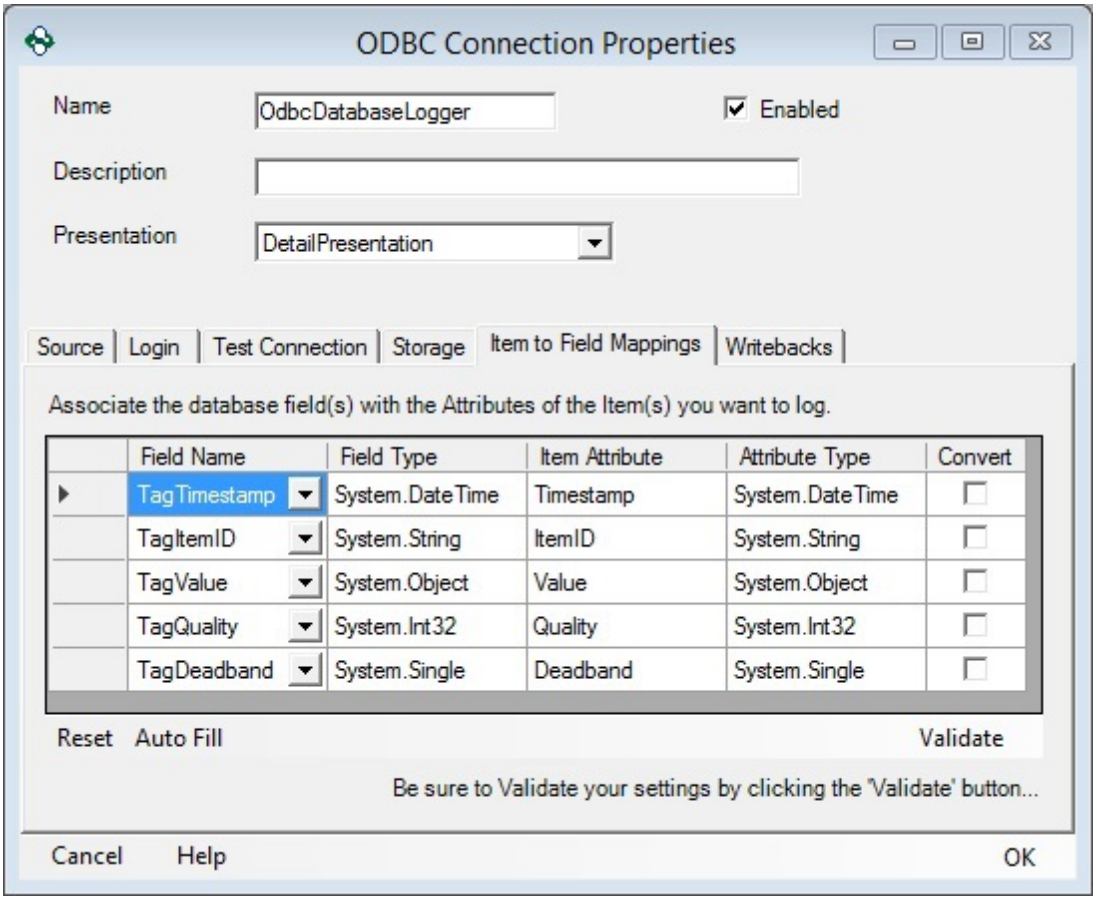
- **Reset**: Resets all Field Name mapping.
- **Auto Fill**: Will fill out the database fields in the order that they are defined in the table.
- **Validate**: Checks for conflicts between the OPC Data Logger mappings and the database structure.



Item to Field Mapping Properties – Table Presentation Mode

- **Field Name**: Lists the Column name that will be used in the database.
- **Field Type**: Lists the data type associated with the column in the database.
- **Item Attribute**: Lists the attribute from the Table presentation that is associated to this column. This value should be set to Value for all entries with the exception of *Timestamp*.

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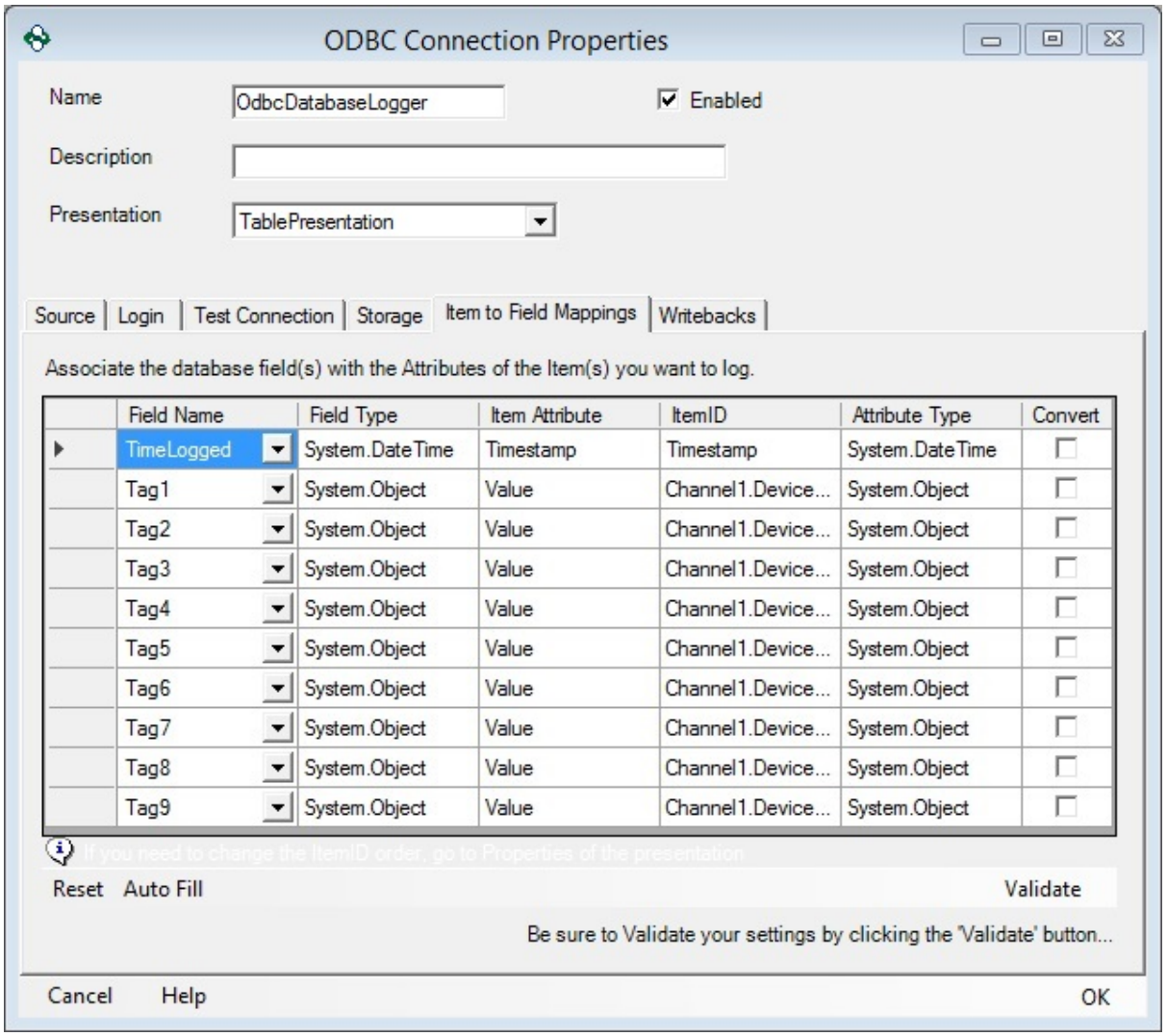
- **Item ID**: Lists the items in the order they exist in the Table Presentation.
- **Attribute Type**: Lists the Data Type associated with the attribute that will be logged to this column.
- **Convert**: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked unless the Field and Attribute Types are different.
- **Reset**: Resets all Field Name mapping.
- **Auto Fill**: Will fill out the database fields in the order that they are defined in the table.
- **Validate**: Checks for conflicts between the OPC Data Logger mappings and the database structure.



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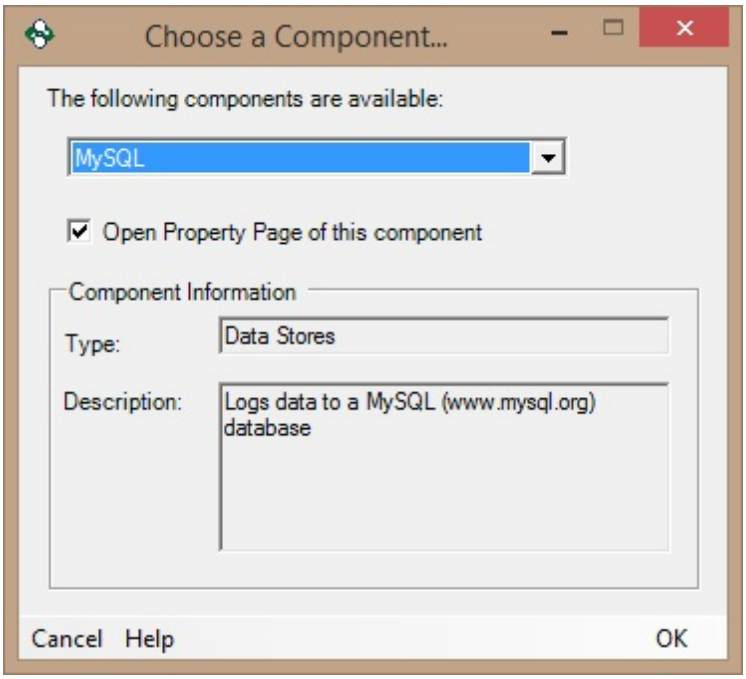
3.3.3.2.4 MySQL

In order to add a MySQL Server Data Storage to the OPC Data Logger configuration right click on the Data Storage Global Component, and use the **Add** button to add a new Data Storage. This section will describe all available properties when a MySQL-Server component is used, and how to configure a connection to a MySQL Server Database.



General Properties

- **Name**: A unique name that identifies the component – this will be how the MySQL Data Storage appears in the tree view, and how other components reference the Data Storage.
- **Description**: Optional description of the Data Store
- **Presentation**: The Data Presentation that will be used to store data in the MySQL Database. This drop down will show a list of all Data Presentation available in the OPC Data Logger configuration.

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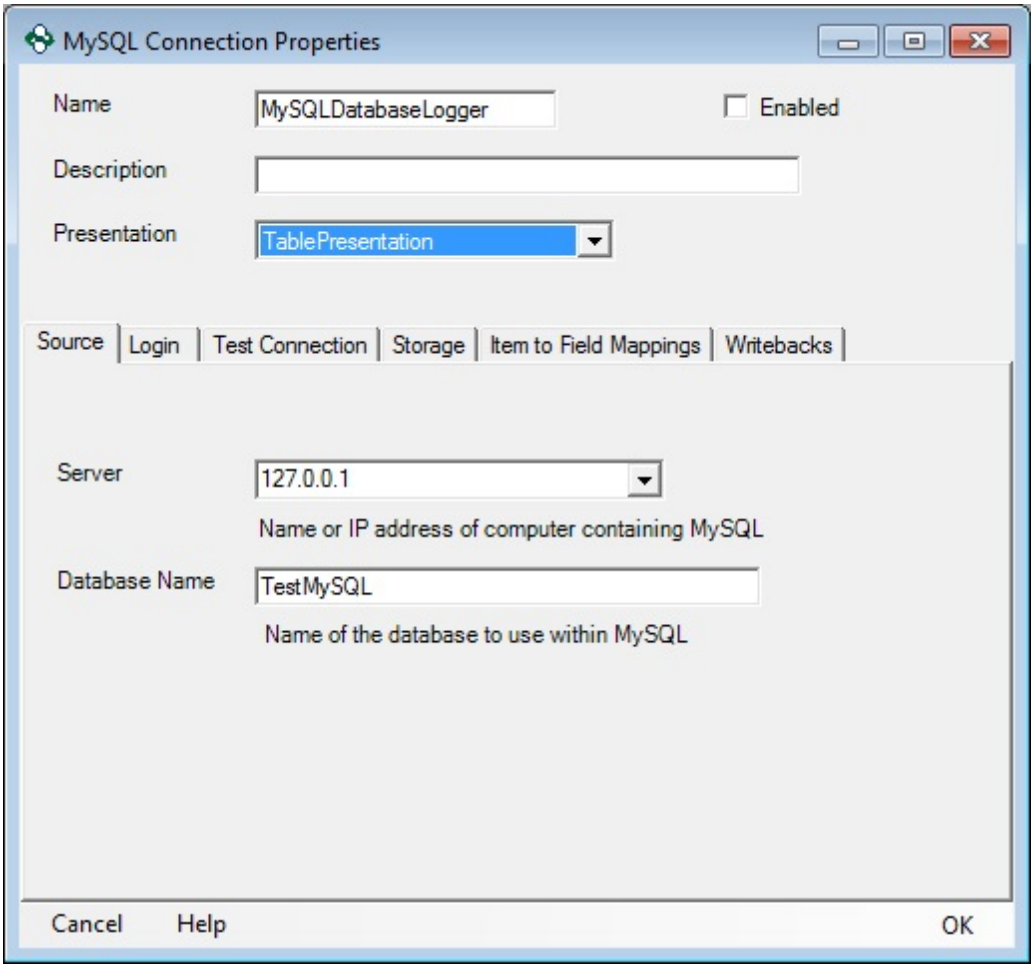
- **Enabled**: When checked the MySQL Server Data Storage is active and available for use by logging tasks. When unchecked no data will be stored to the database through this component.

Source Properties

The Source properties determine where the MySQL Server Database is located that the OPC Data Logger will attempt to connect to.

- **Computer**: Specifies the Name or IP Address of the machine where the MySQL Database is located. For a local connection the loopback (127.0.0.1) address should be used.
- **Database Name**: The name of an existing MySQL database, where the data should be logged.



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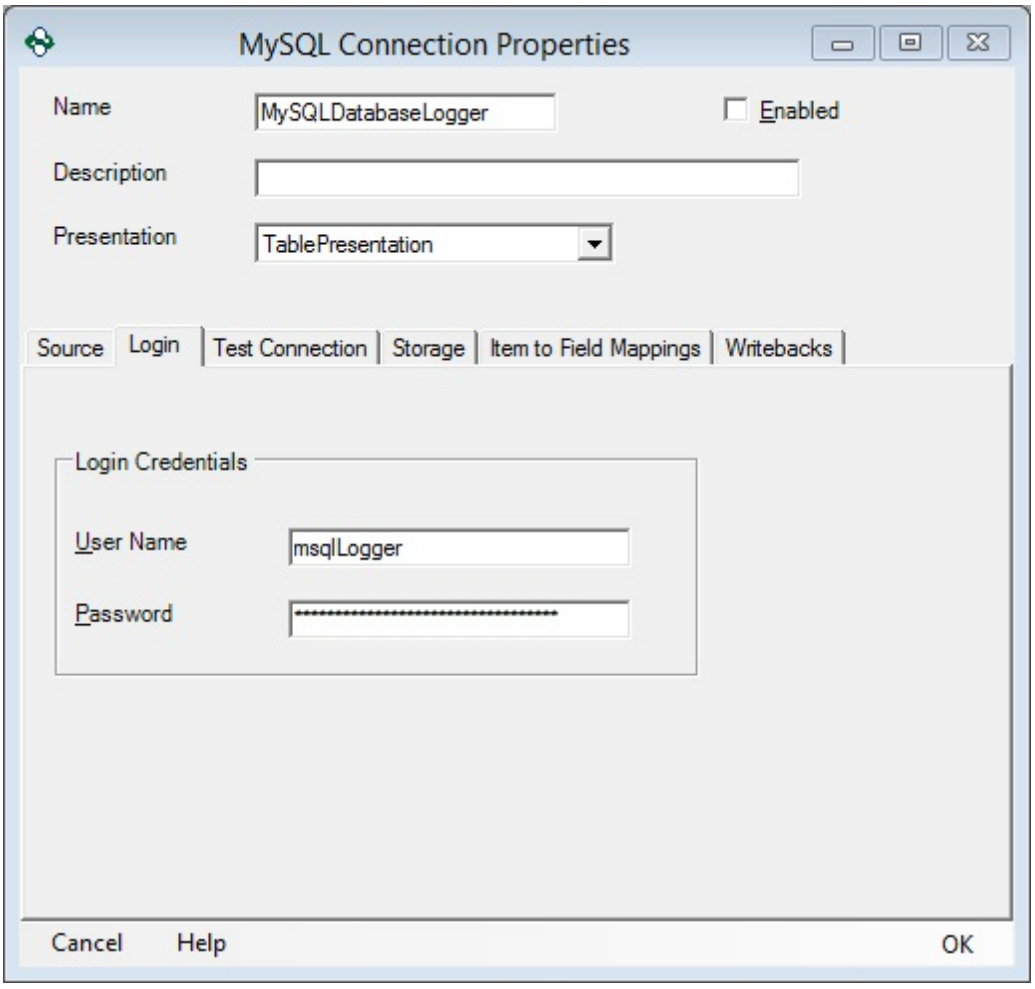
Login Properties

The Login Properties determine how the OPC Data Logger will authenticate when connecting to the MySQL Server Database.

- **User Name**: The user name to use when authenticating with the MySQL database
- **Password**: The password associated with the specified user name.



Test Connection Properties

- **Test Connection**: Will attempt to connect to the MySQL Server Database on the Computer specified in the Source Properties,

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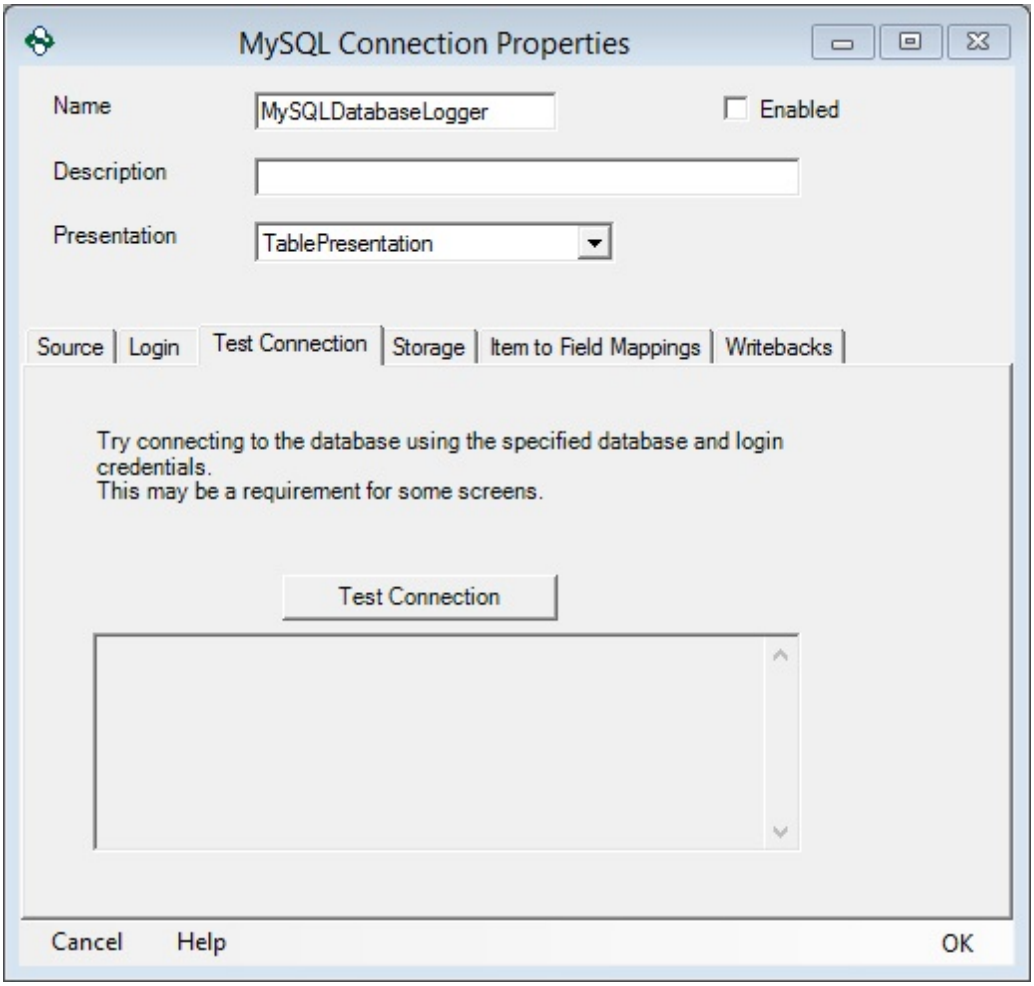
using the authentication settings configured on the Login tab – this test MUST indicate a successful connection before the rest of the MySQL Server Data Storage can be configured.



The storage properties determine the method by which data will be inserted into the MySQL Server Database.

- Stored Procedure: This drop down will populate with a list of all stored procedures available in the specified database.
- Data Logger Managed (SQL): The drop down will populate with a list of all tables that currently exist in the database.
- Refresh: Refreshes the drop-down menus.

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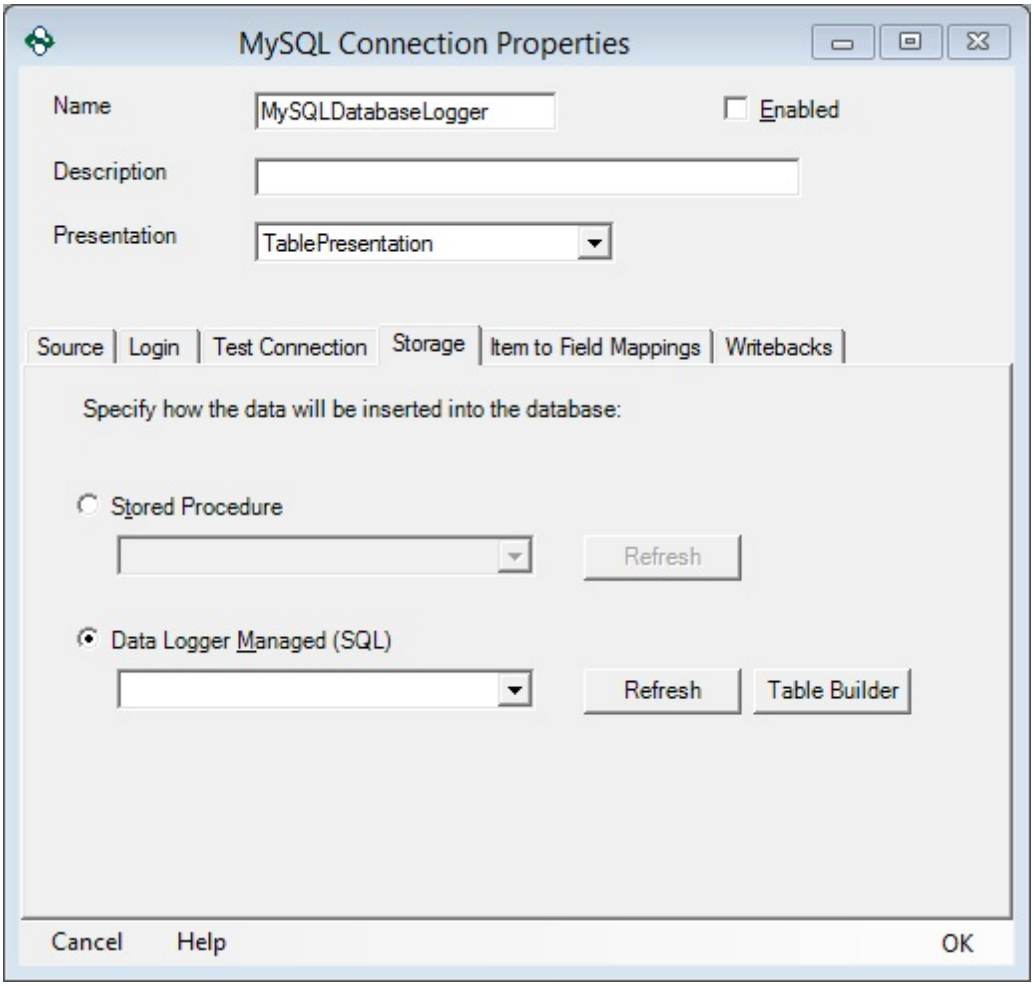
- Table Builder: Will create a new Table in the specified database. For more information on building a new table, refer to the Table Builder section of the help file.



Item to Field Mapping Properties – Detail Presentation Mode

- **Field Name**: Lists the Column name that will be used in the database.
- **Field Type**: Lists the data type associated with the column in the database.
- **Item Attribute**: Lists the attribute from the Detail presentation that is associated to this column.

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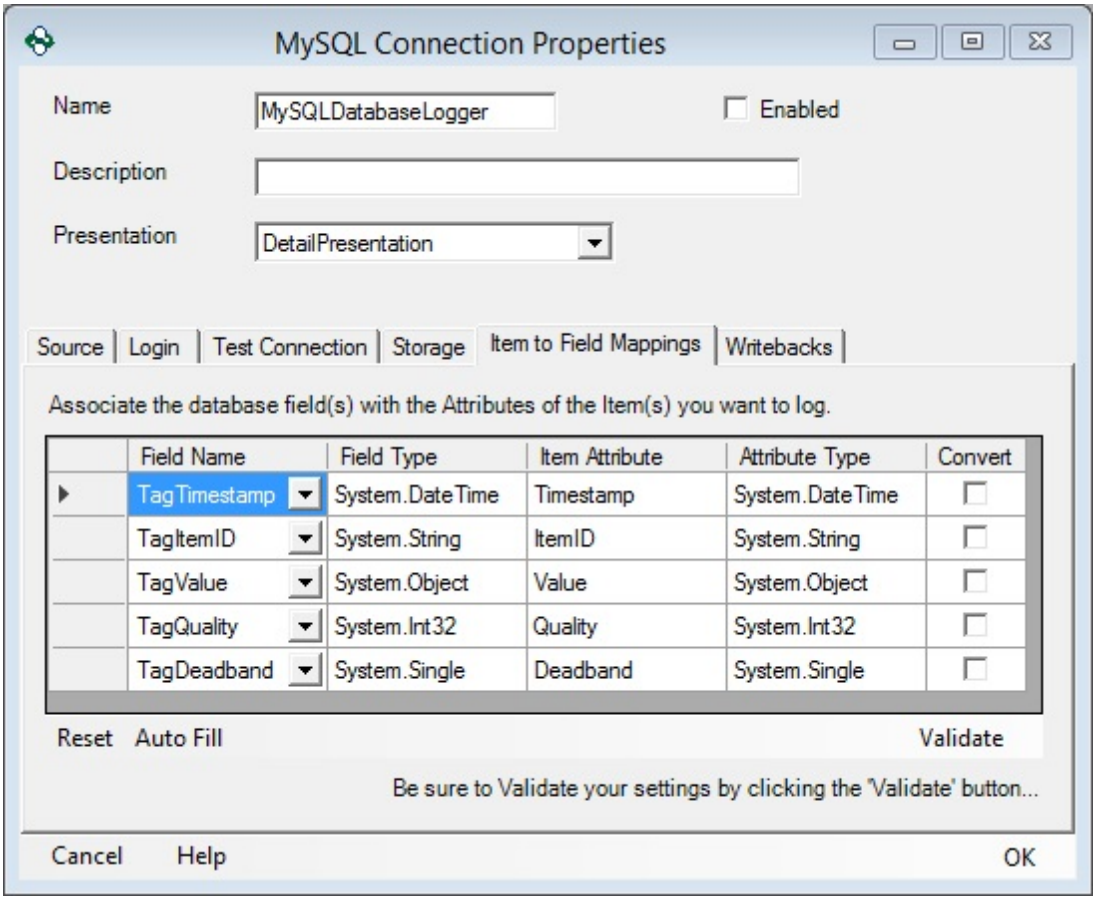
- **Attribute Type**: Lists the Data Type associated with the attribute that will be logged to this column.
- **Convert**: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked unless the Field and Attribute Types are different.
- **Reset**: Resets all Field Name mapping.
- **Auto Fill**: Will fill out the database fields in the order that they are defined in the table.
- **Validate**: Checks for conflicts between the OPC Data Logger mappings and the database structure.



Item to Field Mapping Properties – Table Presentation Mode

- **Field Name**: Lists the Column name that will be used in the database.

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- **Field Type**: Lists the data type associated with the column in the database.
- **Item Attribute**: Lists the attribute from the Table presentation that is associated to this column. This value should be set to Value for all entries with the exception of *Timestamp*.
- **Item ID**: Lists the items in the order they exist in the Table Presentation.
- **Attribute Type**: Lists the Data Type associated with the attribute that will be logged to this column.
- **Convert**: Will attempt to convert the Attribute Data Type to Field Type, if they are different. It is recommend to be left unchecked unless the Field and Attribute Types are different.
- **Reset**: Resets all Field Name mapping.
- **Auto Fill**: Will fill out the database fields in the order that they are defined in the table.
- **Validate**: Checks for conflicts between the OPC Data Logger mappings and the database structure.

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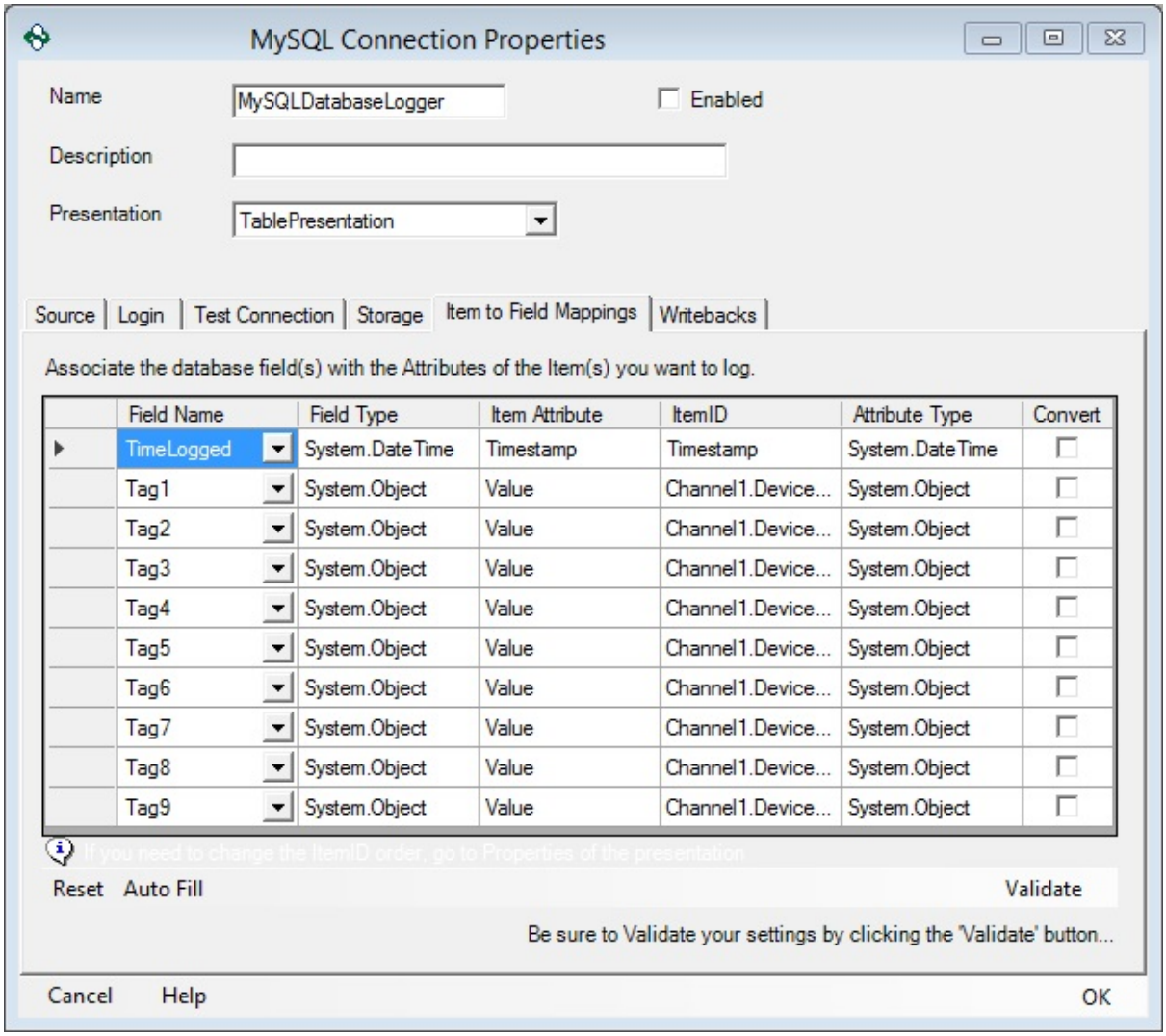

Writeback Properties

For information on configuring a Database Writeback, refer to the Writebacks with Databases section of the help file.

3.3.3.2.5 Table Builder

The Table Builder feature allows the OPC Data Logger to quickly and easily create a new Table in the database specified in the Data Storage.

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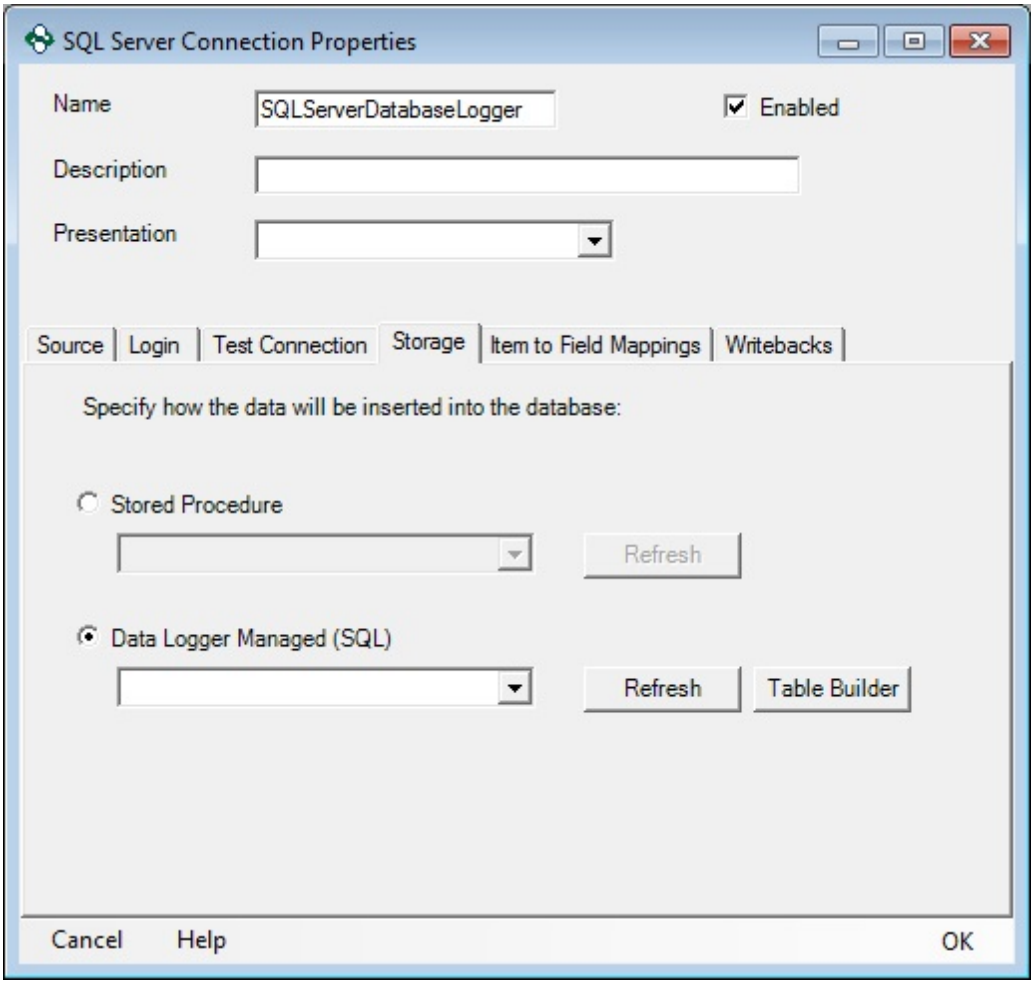
The Table Builder can be accessed via the Storage Tab of the Database Data Storage dialog, and is available when using the Data Logger Managed (SQL) storage method.



Using the **Table Builder** button will open the **Generate New Table** dialog.

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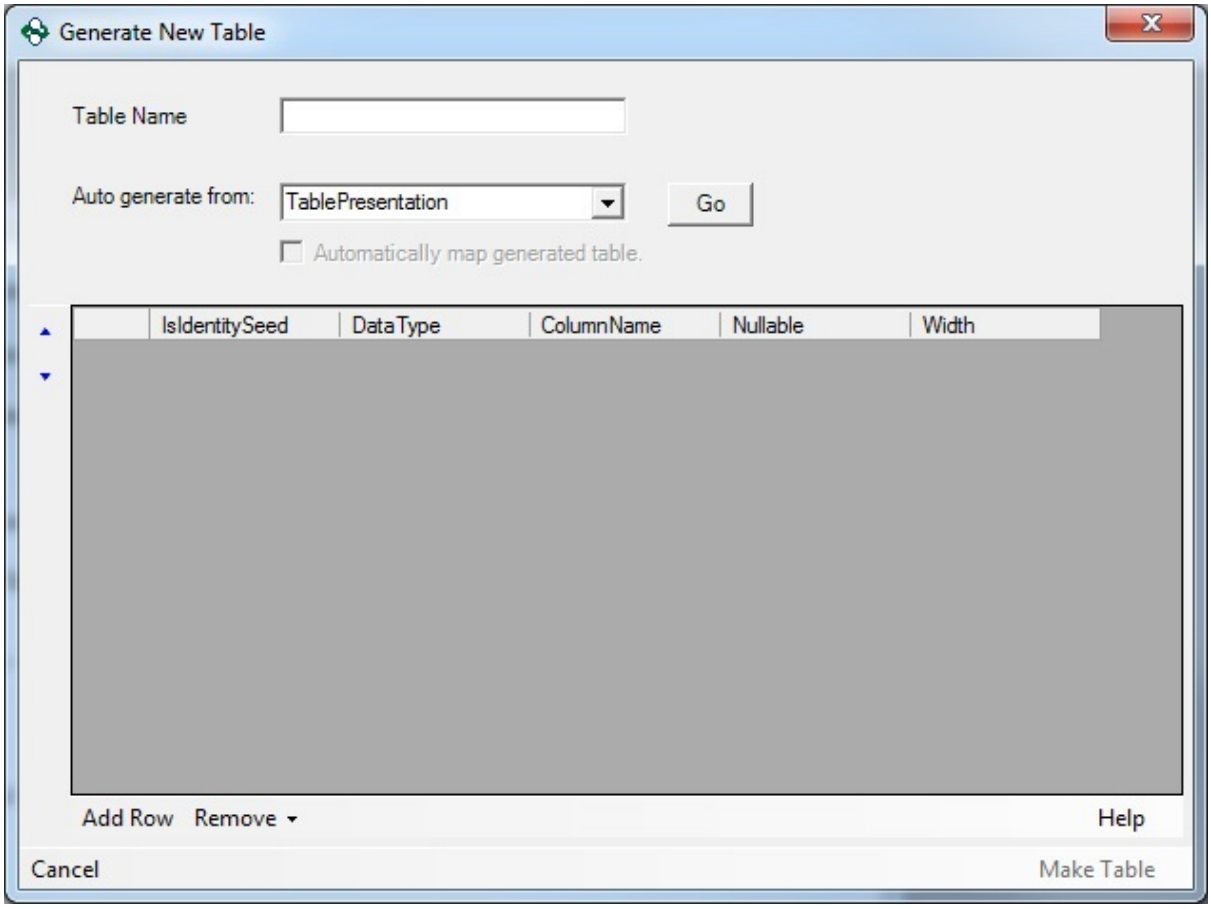

The settings in the **Generate New Table** dialog will determine the structure of the SQL Table

Properties

Table Name: The name with which the table will be created in the Database – this name must be unique from other tables that already exist.

Auto generate from: Determines the presentation mode from which the column names will be generated. The format of the table will be different, depending on if a Detail Mode or Table Mode presentation is selected.

Go: Populates the **Generate New Table** dialog based on the selected Data Presentation.

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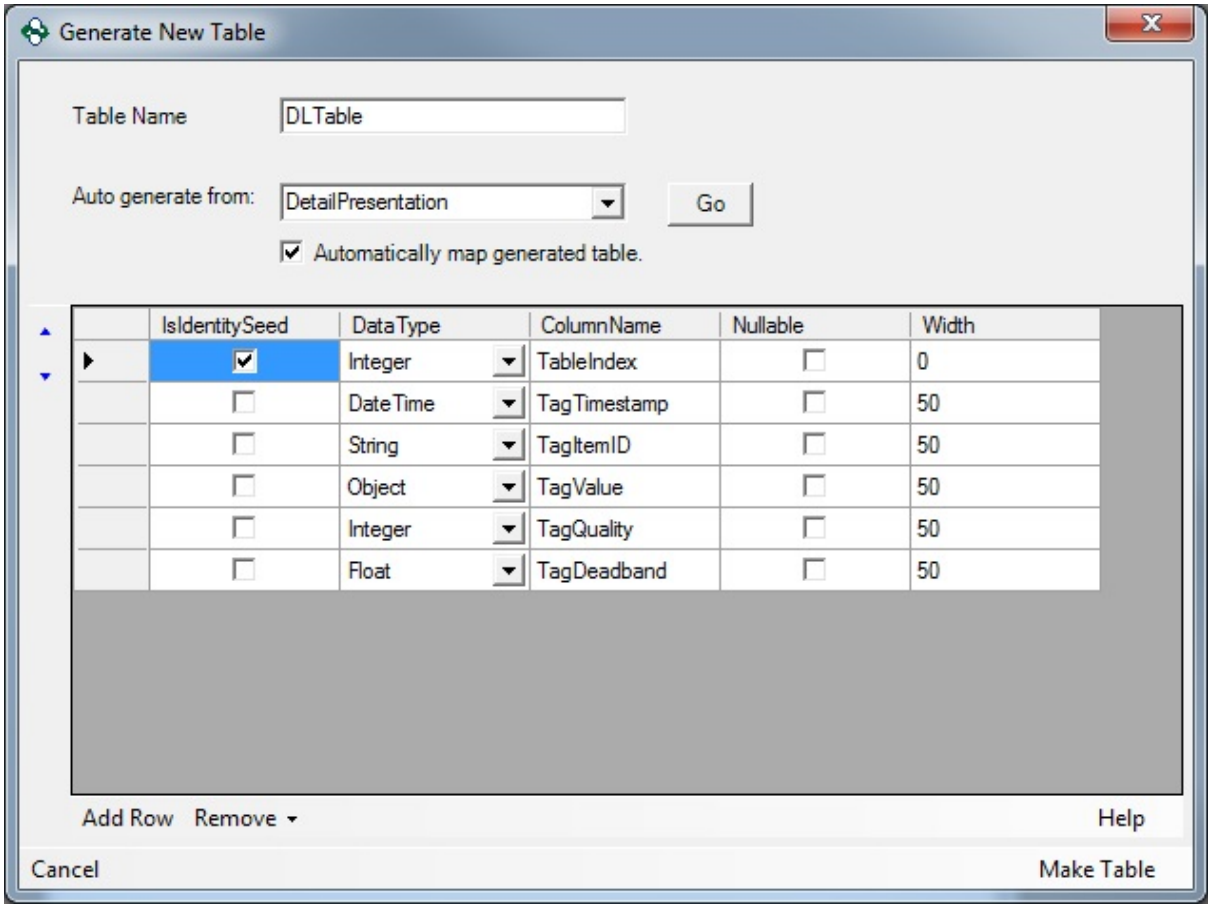

IsIdentitySeed: Determines whether the column will be the identity seed in the Database

DataType: Determines the data type that the table column will be in the Database

ColumnName: Determines the name of the column in the Database Table

Nullable: Determines whether the column values will support Null values.

Width: Determines the width of the column in the Database Table.

Once the auto generated values are confirmed, and changed where desired, the **Make Table** button will attempt to create the table in the specified Database.

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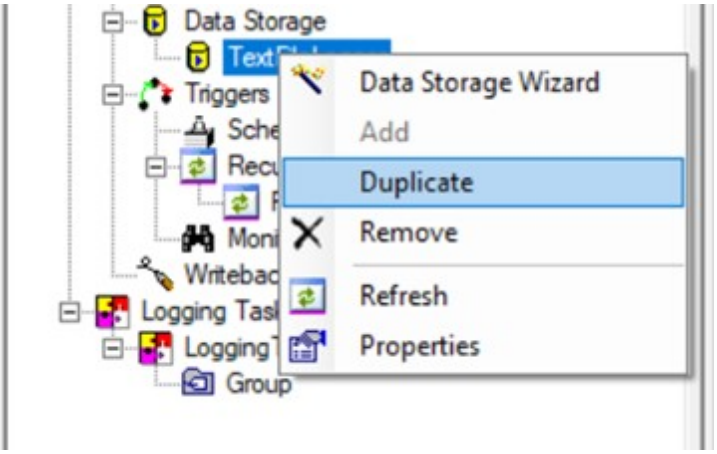
If the OPC Data Logger encounters any errors after the command to create the table is sent to the database, these will be presented via pop-ups.

3.3.3.3 Duplicate Storage

Duplicating existing data storage:

1. Right-click on the existing Data Storage and select "Duplicate".



2. The new Data Storage will be created with all the existing properties of the selected Data Storage.

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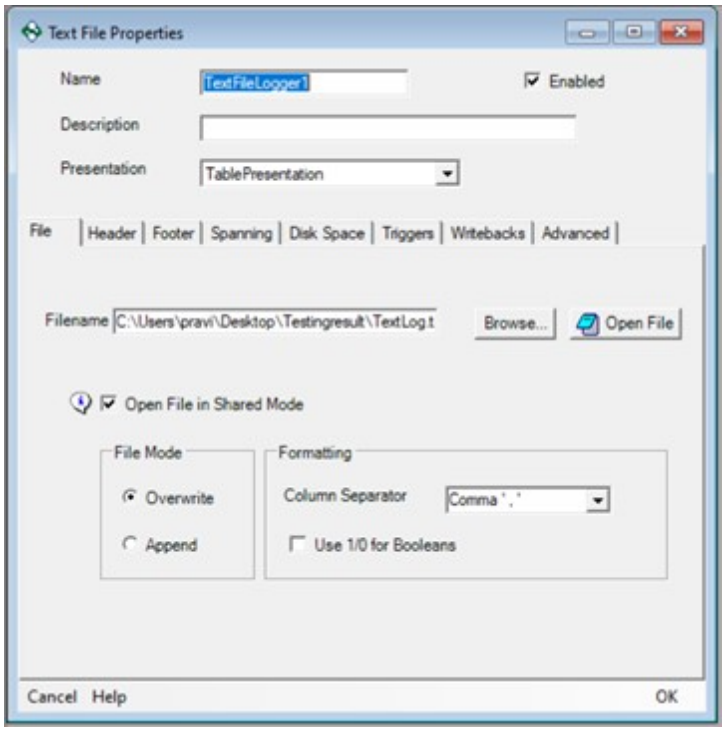

3.3.4 Triggers

What is a Trigger?

A trigger is a mechanism that can be configured when logging should begin or end, or to pause or resume groups of items, or when to trigger a file spanning event.

There are several types of triggers. Each trigger is an identifier that signals when or under what condition events occur:

- Begin logging.
- End logging.
- Pause groups of items.
- Resume groups of items.
- Launch file spanning event.

Every trigger type is capable of signaling each event type.

The trigger types are:

- Scheduled (at a given time)

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- Recurring (repeating at a given interval)
- Monitored Item (based on a value of a monitored tag).

One or multiple of any or all types of triggers can be defined in a project. Any or all types of triggers can be enabled for use simultaneously.

Creating a trigger and enabling it does not cause an event to fire. It must be added to a Logging Task, added to your group or added it to a text file configuration

Events

- Start logging and Stop logging – Configured at the logging task level.
- Pause groups and Resume groups – Configured at the group level.
- Trigger a File Spanning Event – Configured at the data storage level for text files only.
- One-Shot Read Now - Configured at the group level.

3.3.4.1 Monitored Item - Conditional

Monitored Item Triggers can be added to an OPC Data Logger project to monitor an item in the OPC Server for a specified condition, and raise the trigger when the condition is met.

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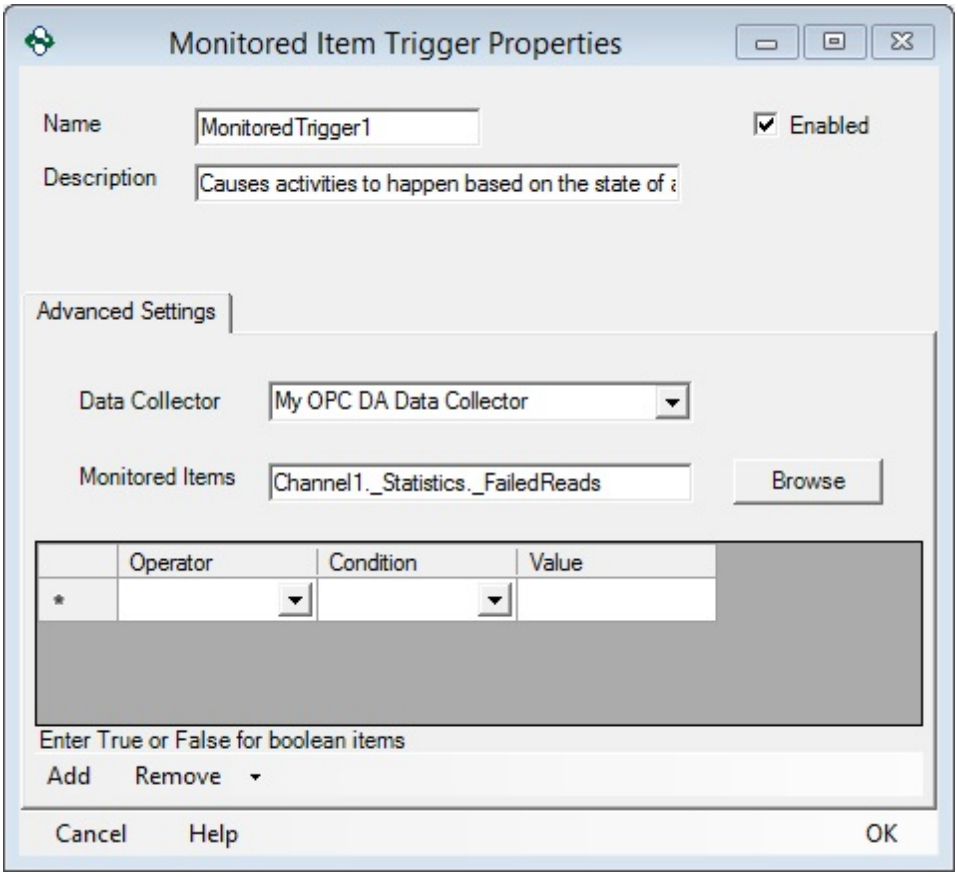

Properties:

- **Name**: A unique name that identifies the trigger – this will be how the Monitored Item Trigger appears in the tree view
- **Description**: Optional, and can be used to describe the function of the trigger.
- **Enabled**: When checks enables the trigger, allowing it to be used by other components in the project. Unchecked the Trigger is inactive and cannot be used in other components.
- **Data Collector**: Specifies the Data Collector from which the item that will be monitored will be added.
- **Monitored Items**: Specifies the item in the OPC Server that this Trigger is monitoring.

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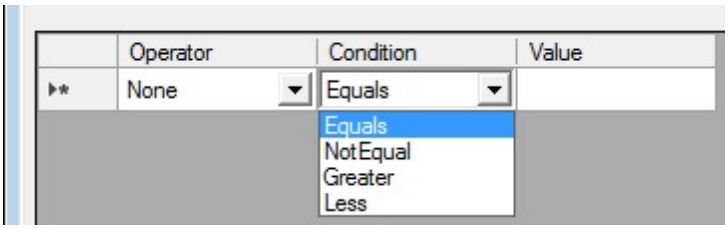
Browsing Monitored Items

For more information on browsing to an item refer to the Browsing section of Manually choosing items to add page.

Conditions, Values, & Operators

Once an item has been selected to be monitored, the condition for the Trigger to be raised must be set using the **Condition** drop-down. The comparison will occur every time that the OPC Server sends an updated value.



- **Equals**: When the monitored item equals the given value, the Trigger will be raised.
- **NotEqual**: Whenever the monitored item does not equal the given value, the Trigger will be raised.
- **Greater**: When the monitored item is greater than the given value the Trigger will be raised.
- **Less**: When the monitored item is less than the given value the Trigger will be raised.

If more than one condition is required for the triggered, the comparison operator must be set for all conditions after the first. The first condition will always have an operator of none.

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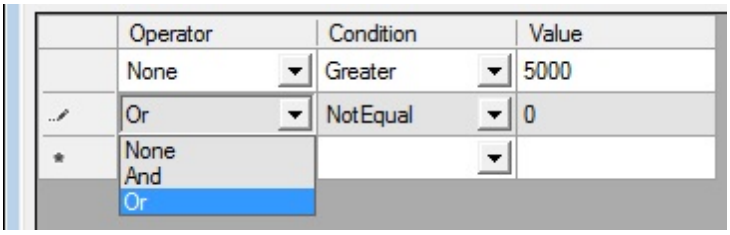

- **None**: This should only be used for the first condition and indicates no prior conditions have been configured
- **And**: This indicates that this condition must be met in addition to the previous condition in order for the trigger to be raised.
- **Or**: This indicates that this condition or the previous condition must be met before the trigger will be raised.

3.3.4.2 Recurring

A Recurring Trigger is a trigger which will fire with a specified frequency, and can be used to initiate events in the OPC Data Logger. A Recurring Trigger can be added, by right clicking on the Recurring Trigger section of the OPC Data Logger tree view, and selecting *Add*.

The configuration screen has several general properties, as well as specific properties that will affect the behavior of how the trigger functions.

- **Name**: The name is user configurable, and will be how the trigger is displayed in the OPC Data Logger tree view.
- **Description**: The description is optional, and can be used to give additional details as to the function of the trigger.
- **Enabled**: The Enabled checkbox determines the status of the trigger. When the checkbox is unchecked, the trigger will be set to inactive.
- **Frequency**: The Frequency determines how often the trigger fires, valid values are 1 - 44640 (1 millisecond to 31 days)
- **Units**: The Units determines the unit of measure for the frequency; milliseconds, seconds, or minutes.

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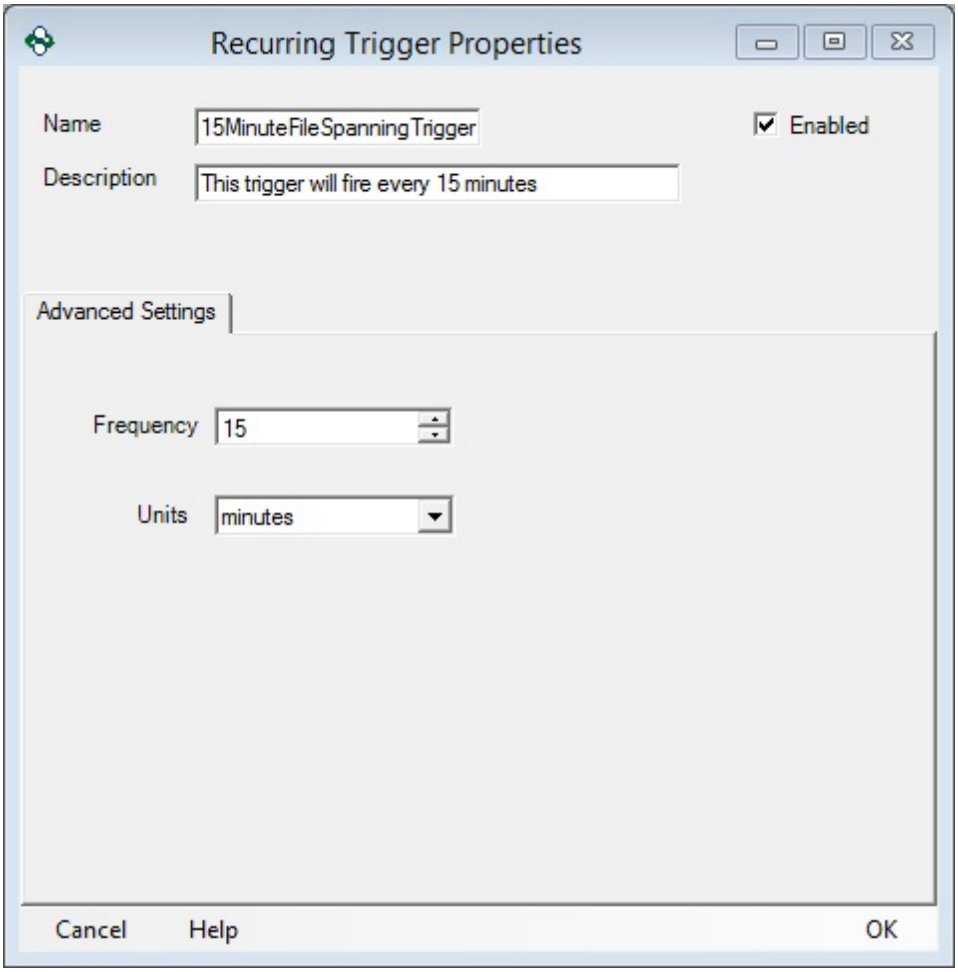

3.3.4.3 Scheduled-Legacy

A scheduled trigger allows you to specify a date and time to start or stop logging, perform a one-shot read, pause groups, resume groups, or launch a file-spanning event.

Note: A scheduled trigger will only fire when connecting to the Data Logger runtime service. Therefore, the triggers will not fire if you are testing the configuration with the Test Run.

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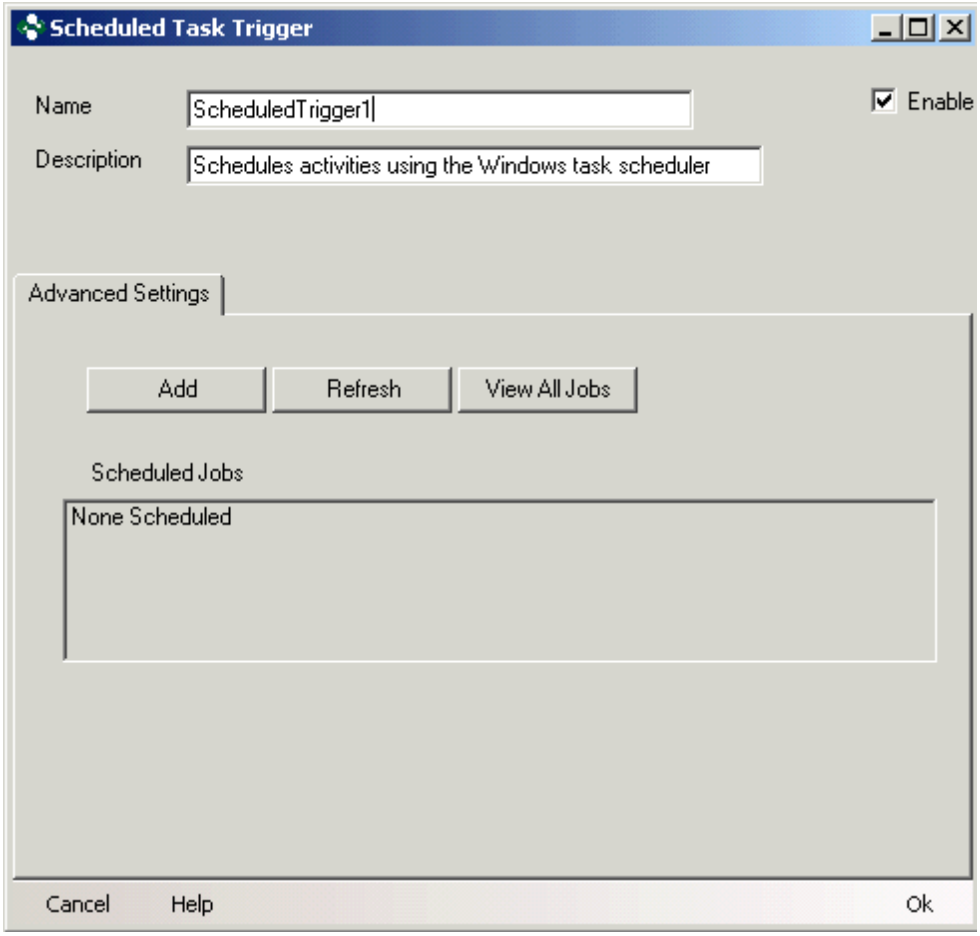

- Add: Adds a new scheduled job to the Windows scheduler task list.
- Refresh: Causes the Scheduled Jobs list to be refreshed and synchronized with the settings in the Windows Scheduler task list.
- View All jobs: Allows you to see at-a-glance all of the Windows Scheduler tasks configured for use with the OPC Data Logger

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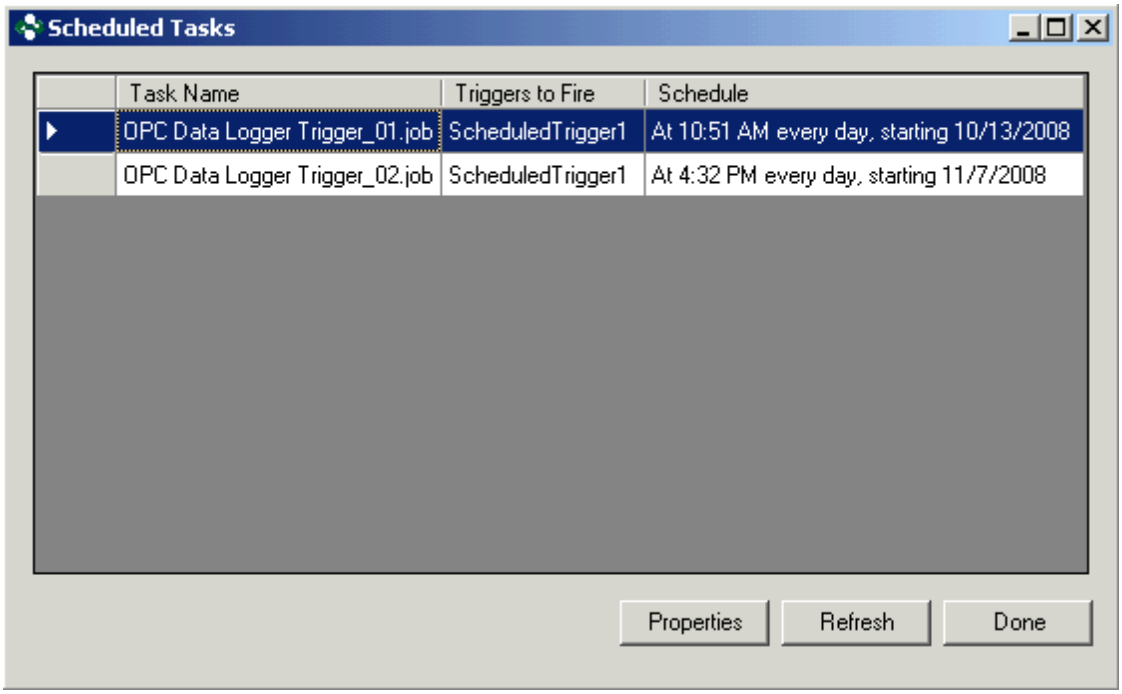


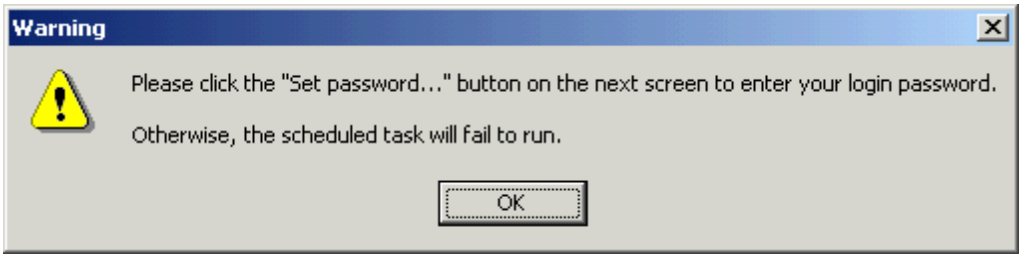
How this trigger works

Leveraging the power of the Windows Scheduler, the OPC Data Logger can now be configured to cause events to happen at virtually any conceivable interval, such as every 1-hour, or every 2nd Thursday of the month, etc.

When the Windows scheduler is executed, the OPC Data Logger Service receives a signal that will cause this trigger to raise.

Instructions

1. Give the trigger a name and description.
2. Click the Add button. This will add a Scheduled Job to the Windows scheduler task list.
3. You will see this dialog:



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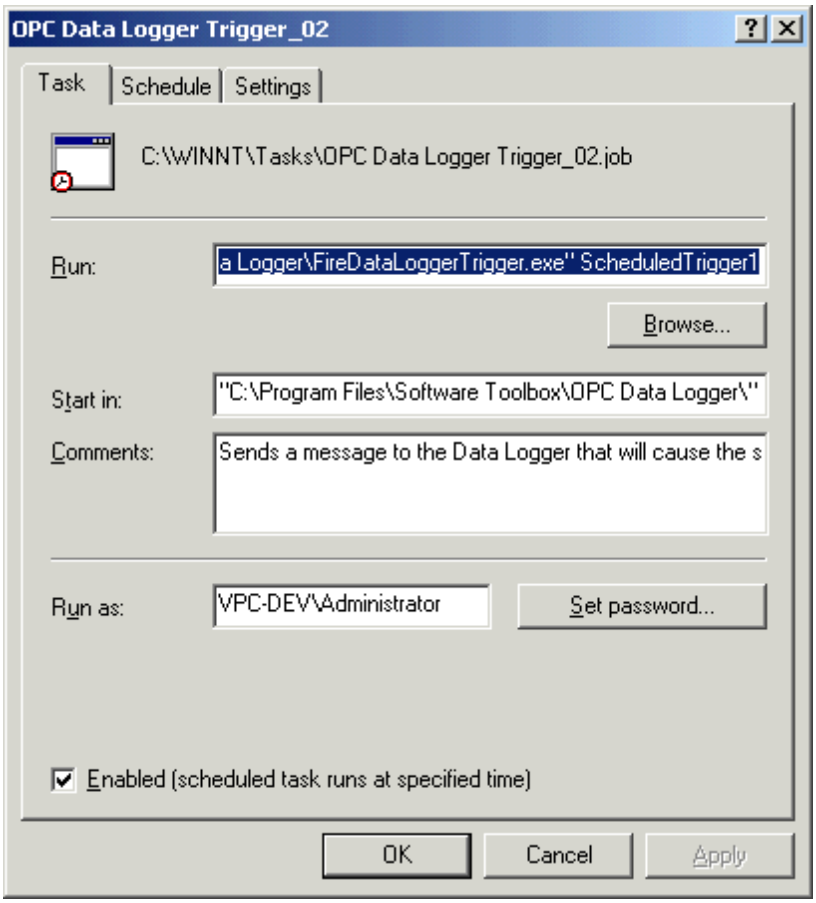
Click the OK button to acknowledge that you will specify a password as instructed.

4. The Windows scheduled job properties dialog will open.
5. Click the Set Password button and enter the password for the selected user.
6. Clicking the OK button to this screen will save and close the dialog.

Dialog Information

Task Tab



- Run: This is the path to the executable that will send the signal to the OPC Data Logger service. Do not alter this field.
- Start In: Do not alter this field.
- Comments: Feel free to enter any comments here.

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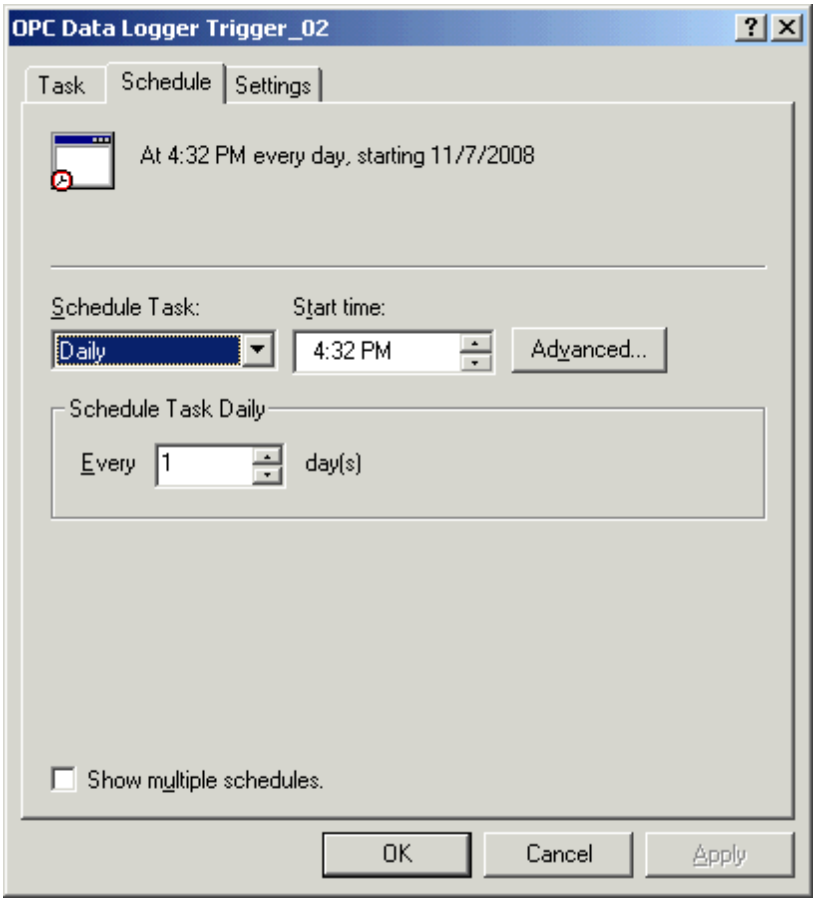
- Run as: Enter the windows login that you want this program to run under. An administrative account is recommended.
- Enabled: Allows the scheduled job to run or not.

Schedule Tab



- Schedule Task: The interval for this job to run at.
- Start time: When the job should run.
- Schedule Task Daily: The options in this section will change along with the Scheduled Task option.

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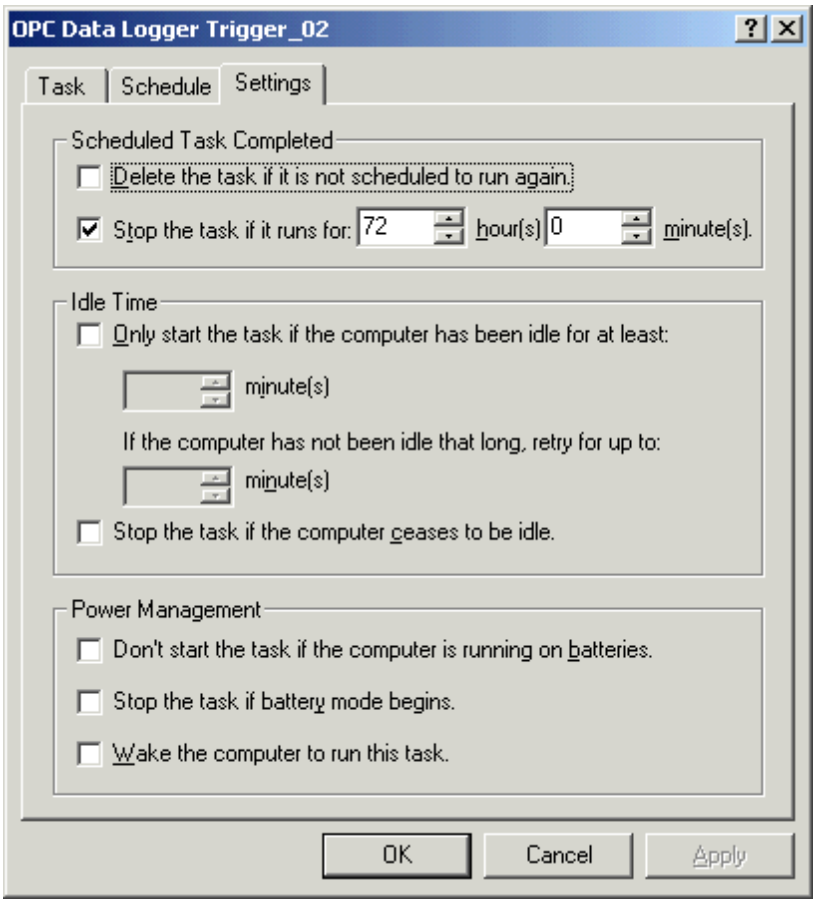
Settings Tab



Please refer to the official Microsoft documentation for this dialog for specific information regarding any of the options available here.

3.3.4.4 Scheduled

Scheduled Trigger components can be added to an OPC Data Logger project in order to execute at a specified time and/or date, or at a specified interval.

Note: A scheduled trigger component will only fire when the OPC Data Logger is connected to the runtime service, and is running as a service. The triggers will not fire when using the Test Run feature.

In order to add a Scheduled Trigger, right click on the Scheduled item in the OPC Data Logger tree view, and select **Add**

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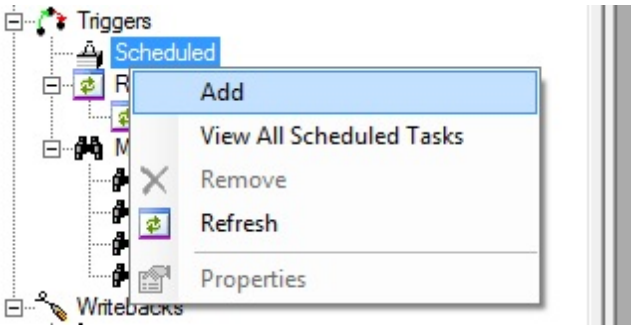

How this trigger works

Leveraging the power of the Windows Scheduler, the OPC Data Logger can now be configured to cause events to happen at virtually any conceivable interval, such as every 1-hour, or every 2nd Thursday of the month, etc.

When the Windows schedule executes, the OPC Data Logger Service receives a signal that will cause the trigger to raise.

Advanced Settings Properties

- **Add**: Configures a new Scheduled Job, and adds it to the Windows scheduler task list.
- **Refresh**: Refreshes the Scheduled Jobs list and synchronize with the current configuration settings in the Windows Scheduler Task List.
- **View All jobs**: Displays all Windows Scheduler tasks that are currently configured for use with the OPC Data Logger.

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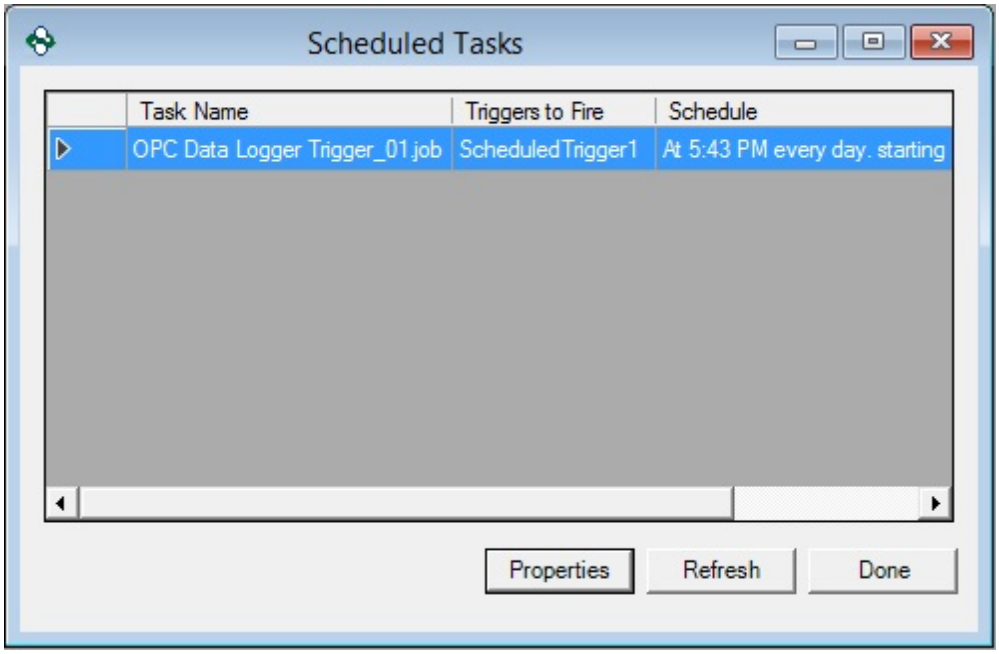
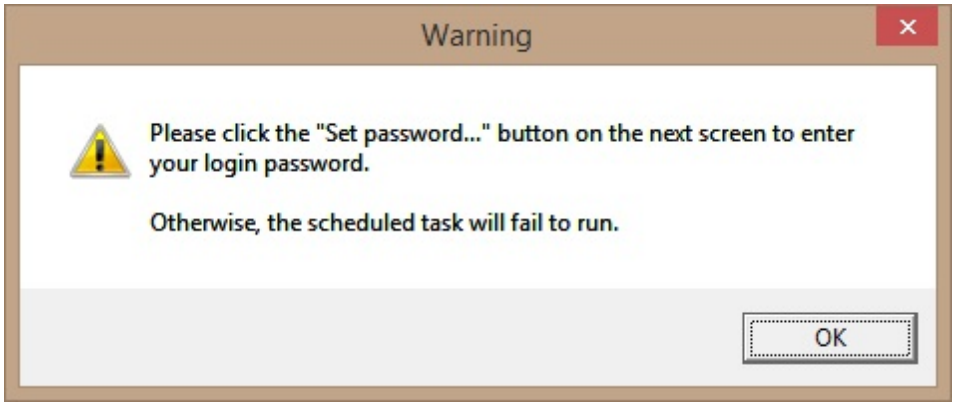


Creating a new Scheduled Job

1. Specify a unique name for the Scheduled Trigger, and give it an optional description.
2. Using the **Add** button create a new Scheduled Job in the Windows Scheduler task list.
3. Acknowledge the warning dialog that a login password must be entered or the task will fail to run



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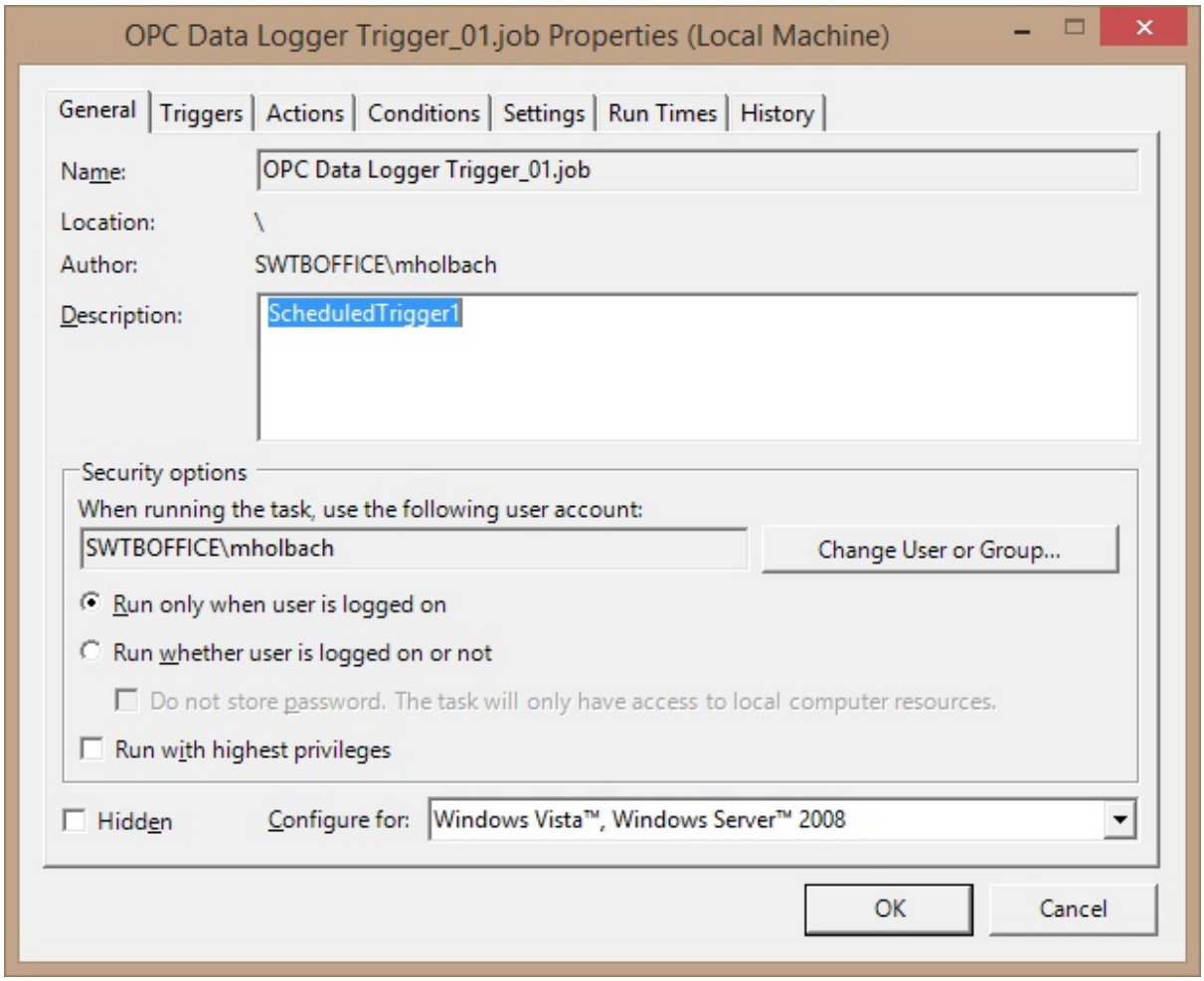
The Windows scheduled job properties dialog will open.

Dialog Information

General Tab



- **Name**: Shows the name of the Scheduled Job, this entry is not user configurable.
- **Location**: Shows the location of the folder that the task is in
- **Author**: Shows the user account that created the Scheduled Task

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- **Description**: A User configurable (optional) description of the scheduled Jo
- **Security Options**
  - **User Account**: Specifies the user account that this task will run under – this account should have administrative privileges on the machine.
  - **Run only when user is logged on**: When checked, the scheduled task will only execute if the User account specified above is current logged on.
  - **Run whether user is logged on or not**: When checked the Scheduled task will execute whether the user account specified above is logged on or not.
  - **Run with highest privileges**: Specifies the privilege level of the scheduled task, it is recommended to have this option checked.

Triggers Tab

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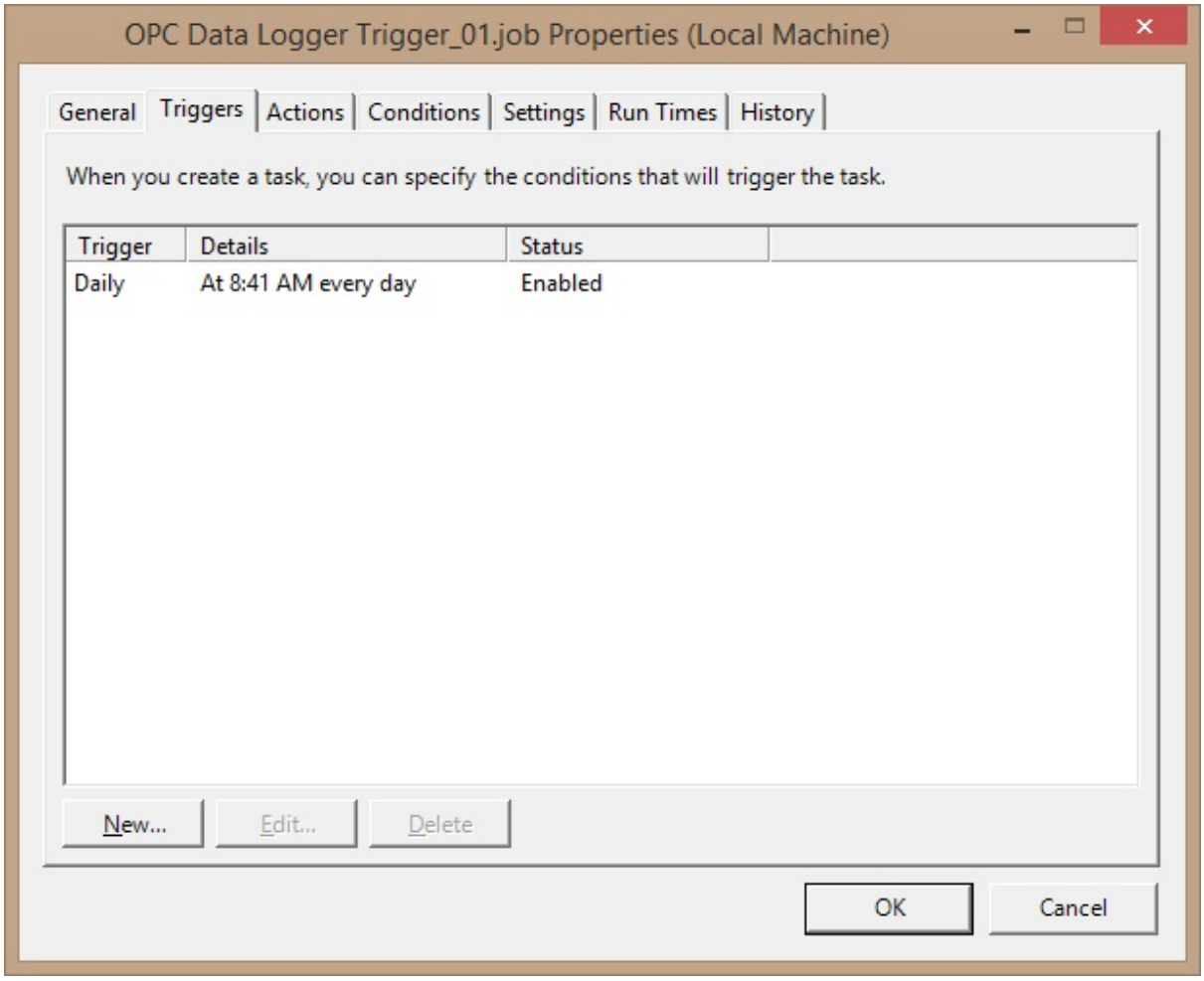

- **New**: Adds a new Trigger to the Scheduled task. Multiple Triggers can be added to a single task, to fully customize when the task should execute. This will open the **New Trigger** dialog shown below.
- **Edit**: Opens the trigger that is currently highlighted in the list for editing.
- **Delete**: Deletes the trigger that is currently highlighted from the list.

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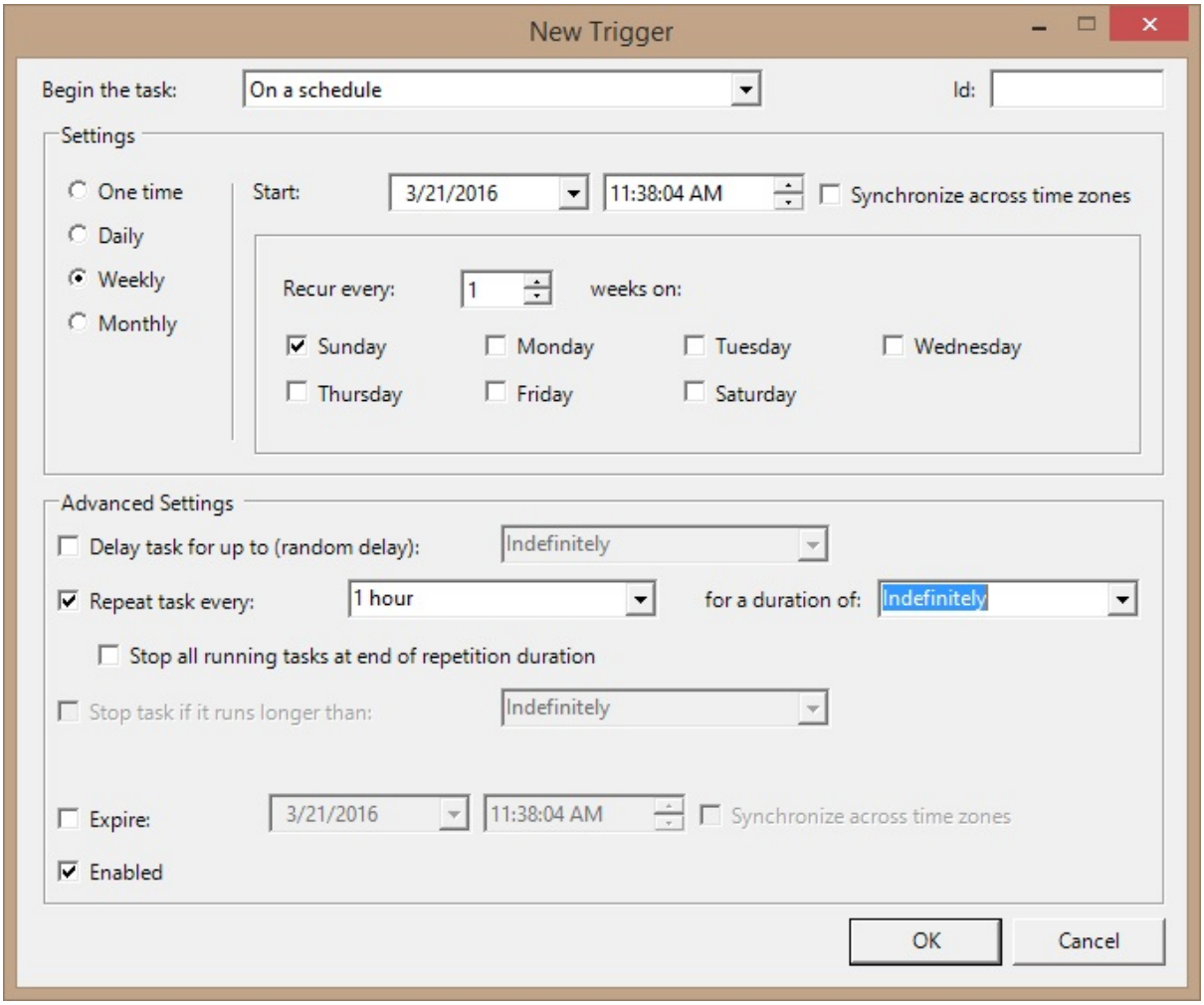

- **Begin the Task**: Specifies the type of trigger that will be configured. The most common setting will be On a schedule and these settings will be explained further below.
- **Settings**: Specifies how frequently the trigger will execute
  - **One Time**: The trigger will execute a single time, at the specified time and date.
  - **Daily**: The Trigger will start at the specified time and date, and then recur at the specified interval.
  - **Weekly**: The Trigger will start at the specified time and date, and then recur on the specified days, every specified number of weeks.

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- **Monthly**: The Trigger will start at the specified time and date, and then recur monthly, on specified days in selected months.

- **Advanced Settings**:

  - **Delay task for up to (random delay)**: Introduces a random delay between the task running and the trigger being raised. For example a 15:00 start time, with a 1 hour delay, would execute the task sometime between 15:00 and 16:00.

    Note: In most OPC Data Logger applications this behavior is not desirable, and the delay should be kept disabled.

  - **Repeat task every**: Specifies an interval at which the task will repeat. The task will repeat for the given duration. To run the task forever, specify "Indefinitely" in the duration field.

  - **Stop Task if it runs longer than**: Stops a long running task after a specified time interval

  - **Expire**: Sets a time and date after which the trigger will no longer be active, and no longer cause the task to happen.

Actions Tab

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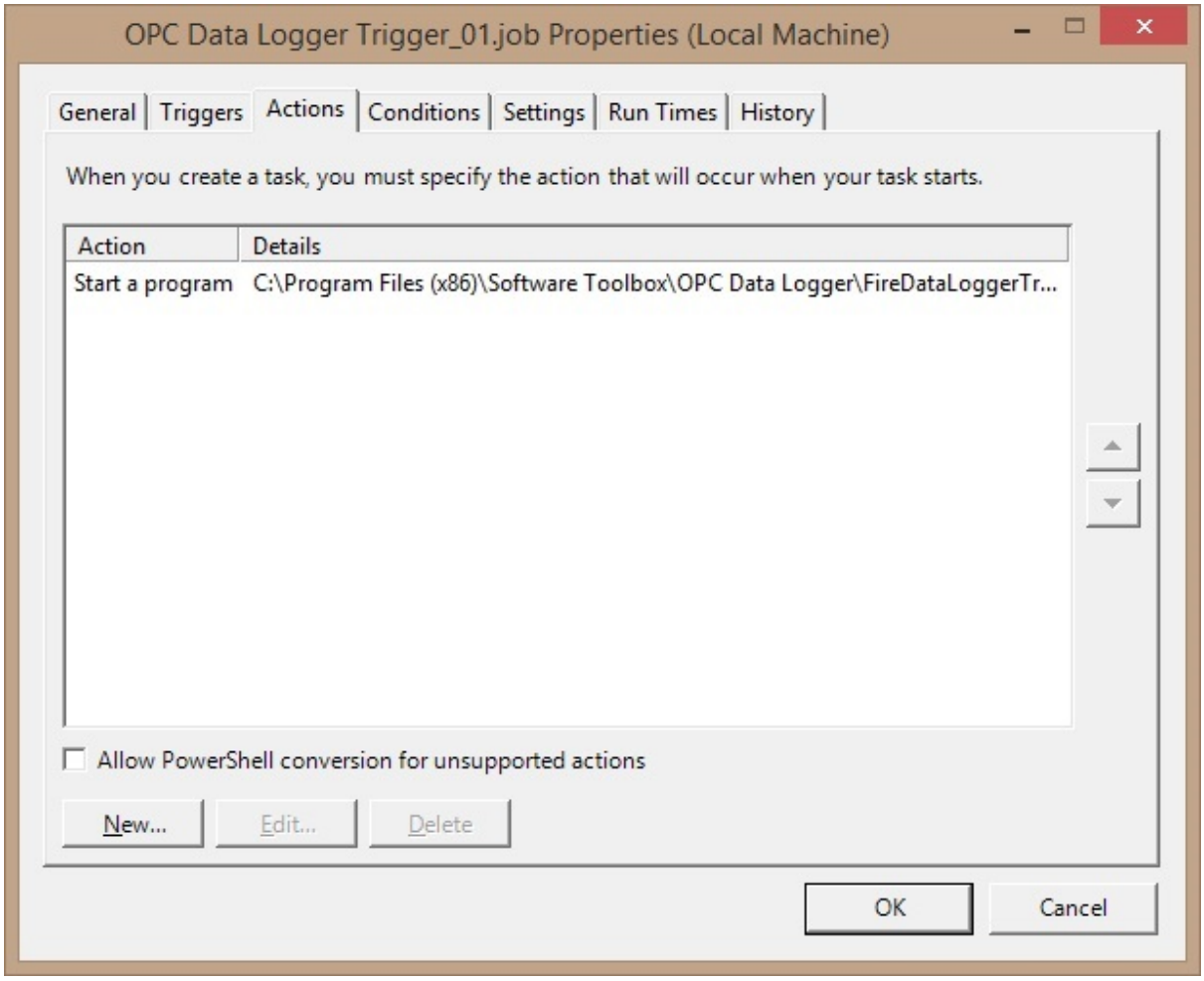

This window specifies which OPC Data Logger Scheduled Trigger should be raised when this Task executes. The various tasks will be executed in the order that they appear in the list.

Note: These settings will be configured by the OPC Data Logger when the trigger is created, and should generally not be modified. When additional actions are configured, care should be taken that the original trigger is not removed.

Conditions Tab

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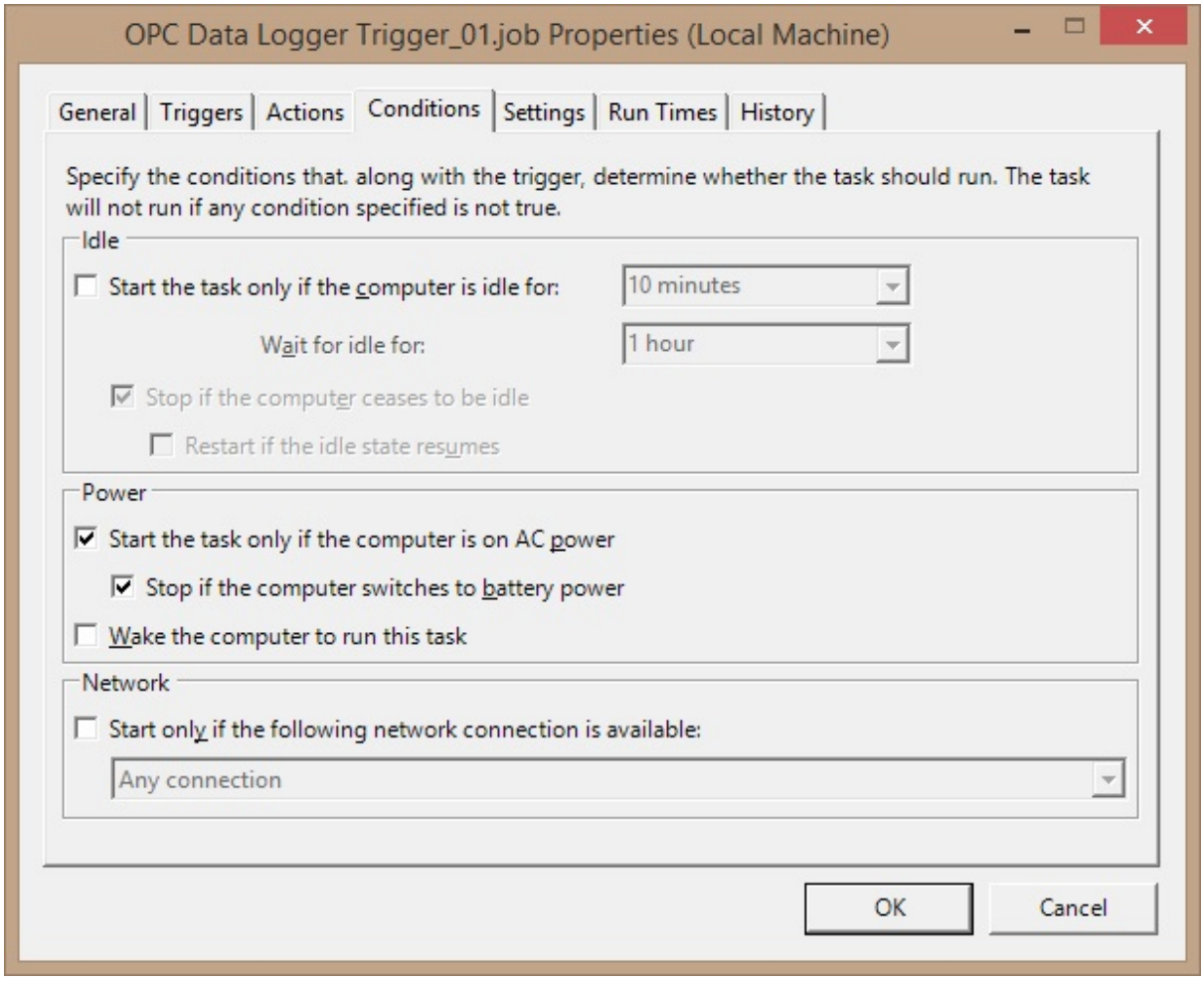

The Conditions Tab allows configuration of additional conditions that must be met when the task executes, before the trigger is raised.

- **Idle**: Only executes the task if the computer is idle for a specified period of time.
- **Power**: Only executes the task when then the computer is on AC power.
- **Network**: Only executes the task when the specified Network Interface is available.

Settings Tab

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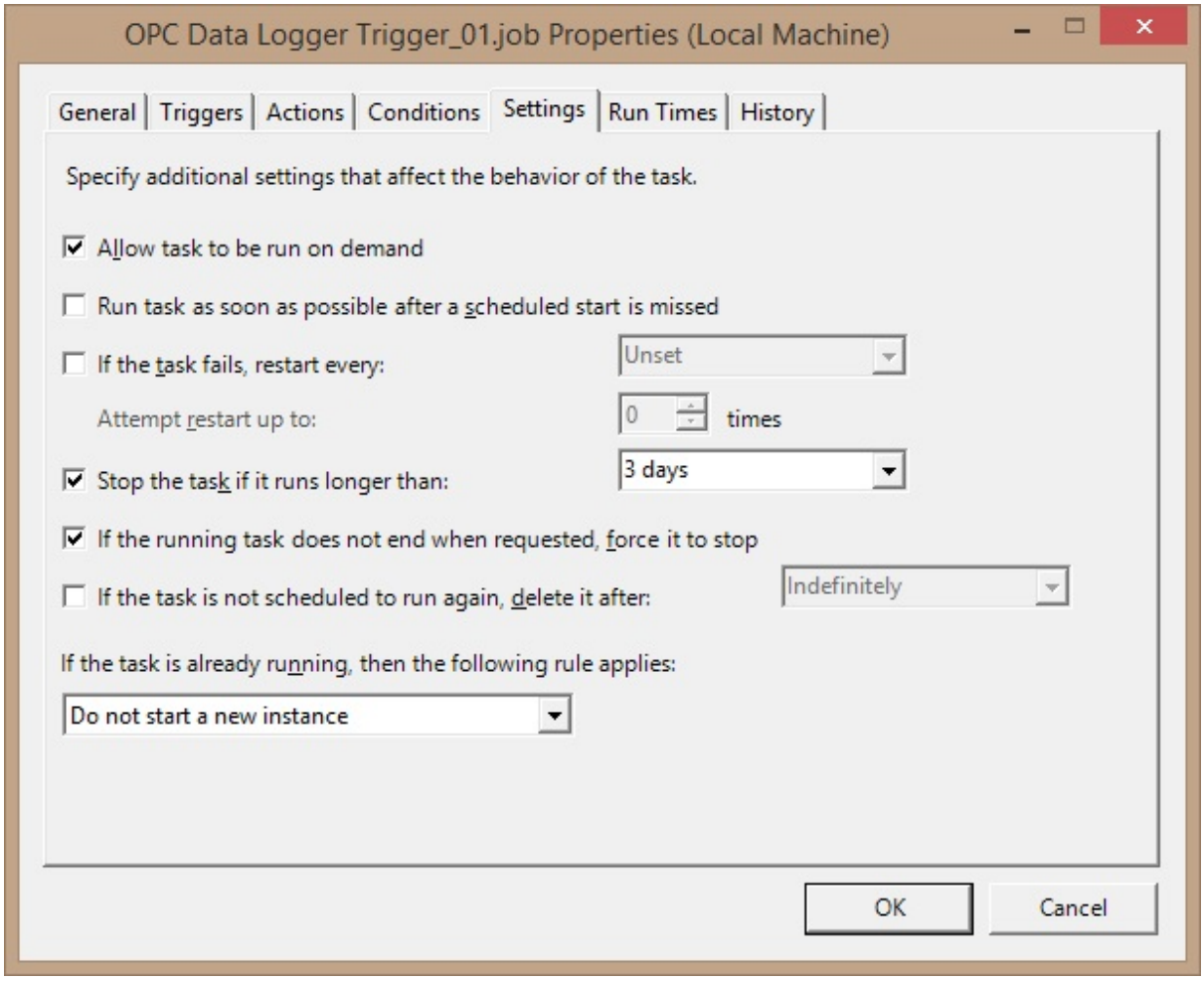

- **Allow task to be run on demand**: When checked the scheduled task can be manually triggered, between the normally scheduled intervals.
- **Run task as soon as possible after a scheduled start is missed**: When checked the scheduled task will be queued and executed as soon as possible, if the scheduled start time is missed.
- **If the task fails, restart every**: Specifies the interval with which the OPC Data Logger will attempt to restart the scheduled task when execution fails.
- **Stop the task if it runs longer than**: When checked the scheduled task execution is stopped if it runs for the specified time interval without completing.

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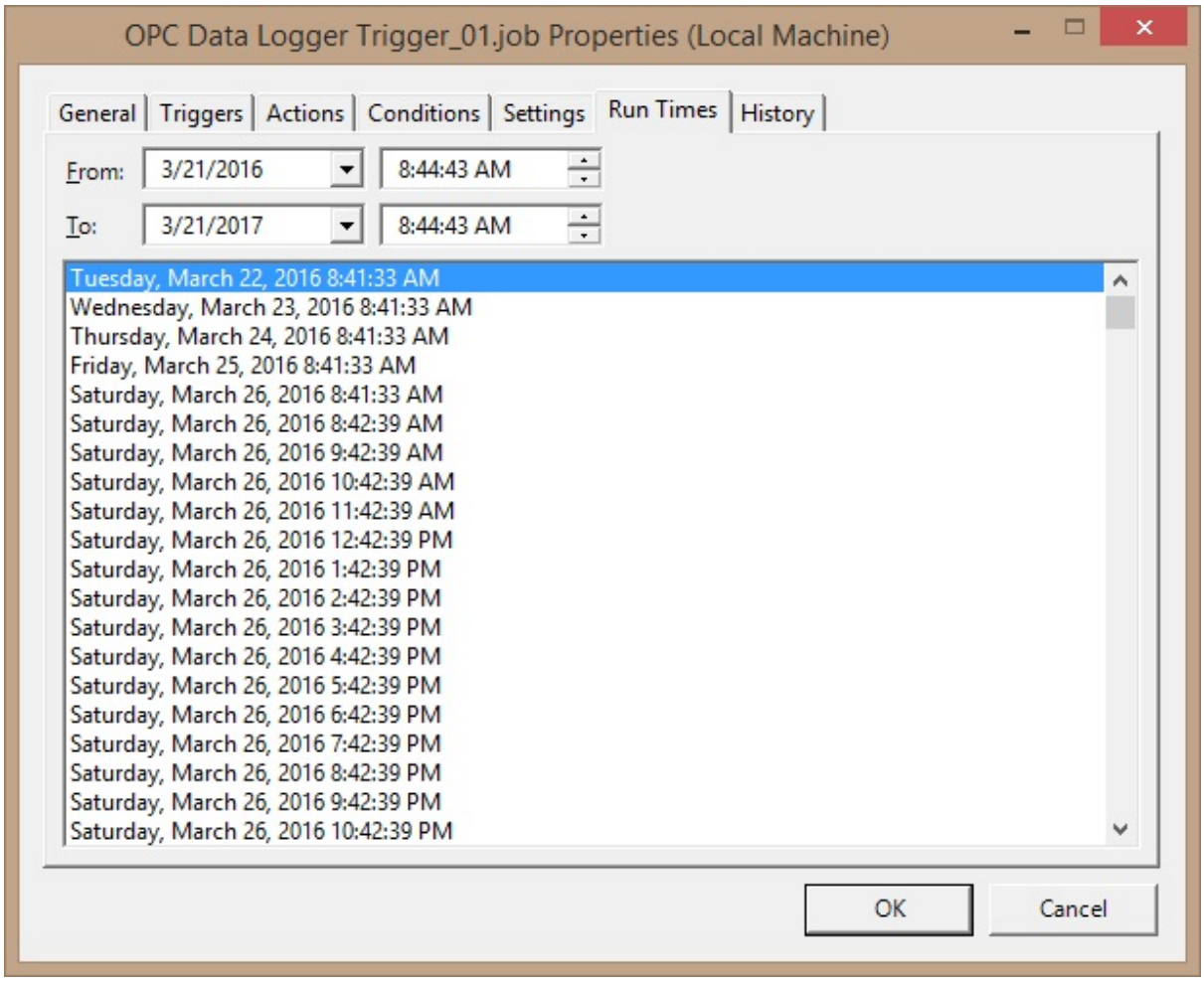
- **If the running task does not end when requested force it to stop**: Forces the scheduled task to stop running if it does not end when requested by the operating system.
- **If the task is not scheduled to run again, delete it after**: This setting helps clean out old triggers, and will remove tasks/triggers if they are not scheduled to run again.
- **If the task is already running**: Determines the behavior of the Scheduled task when it executes and the task is already running.

Run Times Tab



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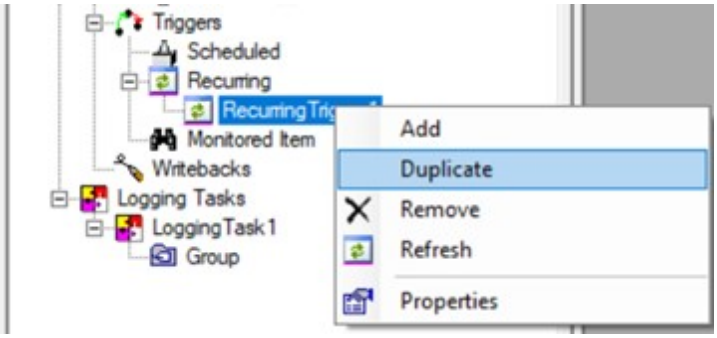
The Run Times tab will list all scheduled times that the task will be run between the **From** and **To** Date and Time, based on the current Scheduled Task settings.

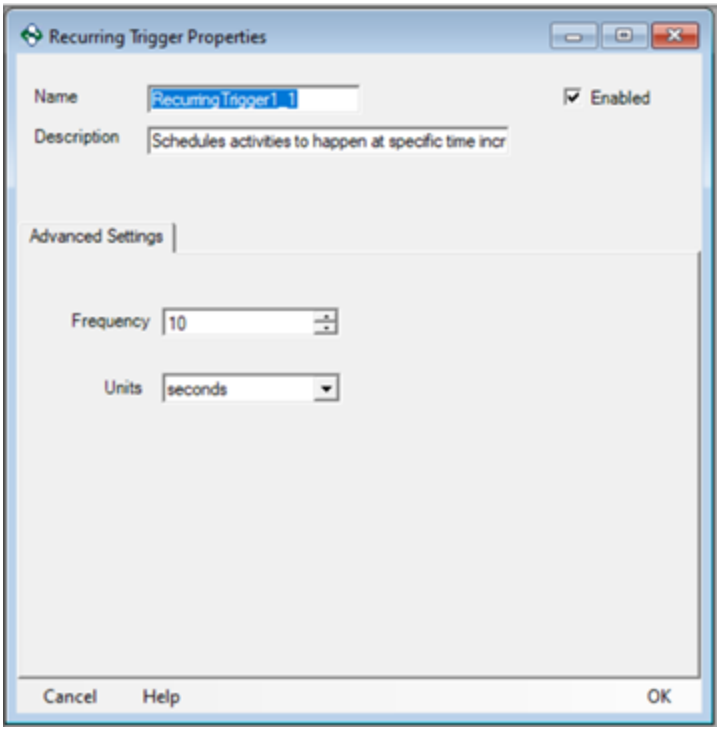
3.3.4.5 Duplicate Triggers

Duplicating Existing Triggers:

1. Right-Click on the existing Trigger and select "Duplicate".



2. The new Trigger will be created with all the existing properties of the selected Trigger.



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3.3.5 Writebacks

A Writeback is a mechanism with which the OPC Data Logger is able to write a value back to a tag in the OPC Server. This can be useful in a large number of applications, including:

- Confirming that a log was successful
- Indicating that the connection to the database was lost/re-established
- Indicating that there is/was a problem logging the last set of data

Efficiently using a Writeback is twofold; creating a Writeback and assigning the proper value and object to be written to, and configuring an event to trigger when the write should be executed.

Managing Writebacks:

- Adding a Writeback
- Removing a Writeback

Configuring events to Writeback

- Triggers
- Database Logging
- Text File Logging

3.3.5.1 Configuring Writebacks

3.3.5.1.1 Adding a Writeback

A Writeback component can be configured to write a predefined – static – value back to an OPC Data Source. A Writeback can be added to an OPC Data Logger project, by right-clicking on **Writebacks** in the tree-view, and selecting **Add Writeback**.

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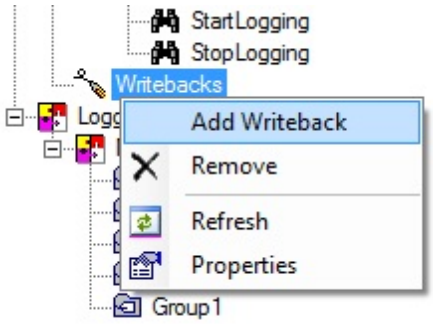

Properties

- **Name**: A unique name that identifies the Writeback. This will be how the Writeback appears in the OPC Data Logger tree view
- **Description**: Optional description of the Writeback and its function.
- **Enabled**: When checked the Writeback will be active and will fire when triggered. Unchecked, the Writeback will not be available for use in the OPC Data Logger project.

Details Tab

Data Collector – Determines which Data Collector the OPC Data Logger will browse when selecting an item to write to.

Behavior – The behavior setting determines what type of write will be issued:

- **Asynchronous**: Each write will be performed asynchronously, and not block the OPC Data Logger while waiting on a confirmation that the write was completed. Each write request will be issued to the data collector, with the write complete notification coming from the OPC Server whenever completed.
- **Synchronous**: Each write will be done synchronously, and the connection between the OPC Data Logger and the data source will be "blocked" after each write while the OPC Data Logger waits for a write completion event. Synchronous writes are the most reliable, but also the most expensive in terms of resources.

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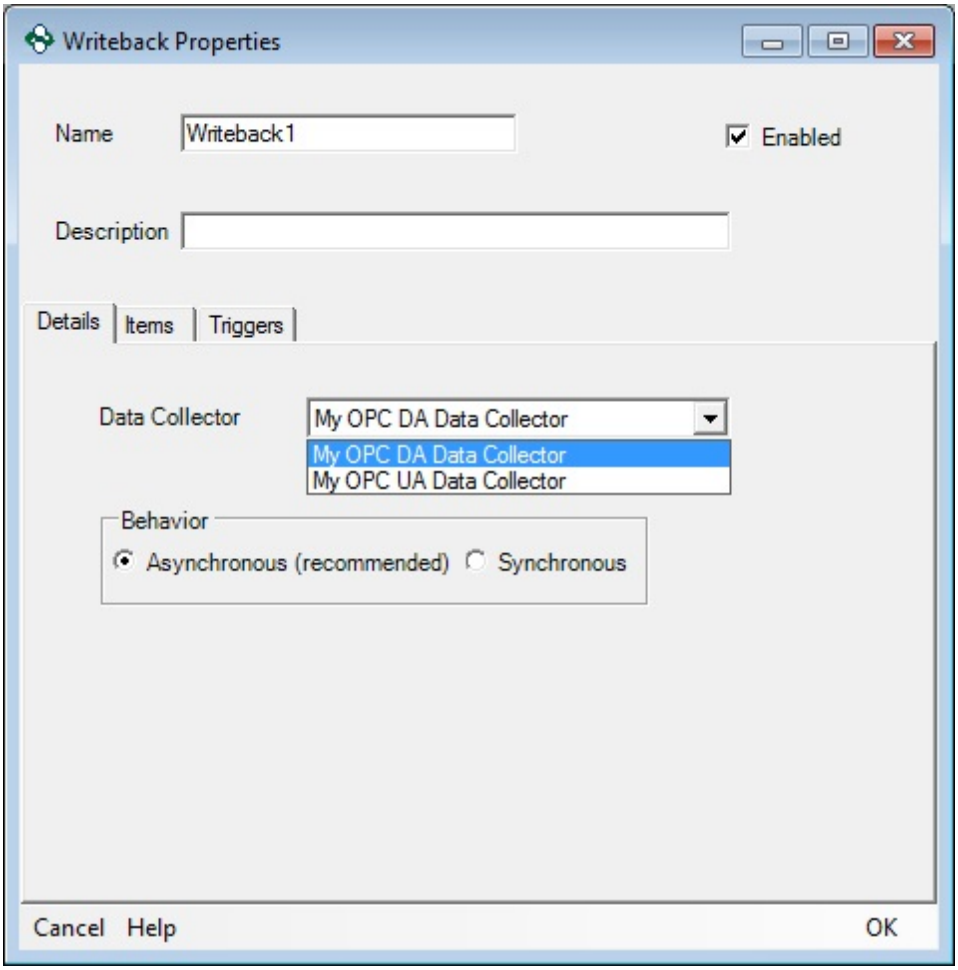

Items Tab

The Items tab allows configuration of the item(s) to which this Writeback will be issued, as well as the value that will be written. Selecting the **Add** button will allow Manually choosing items to add by browsing the OPC Server. Multiple items can be written to through the same Writeback.

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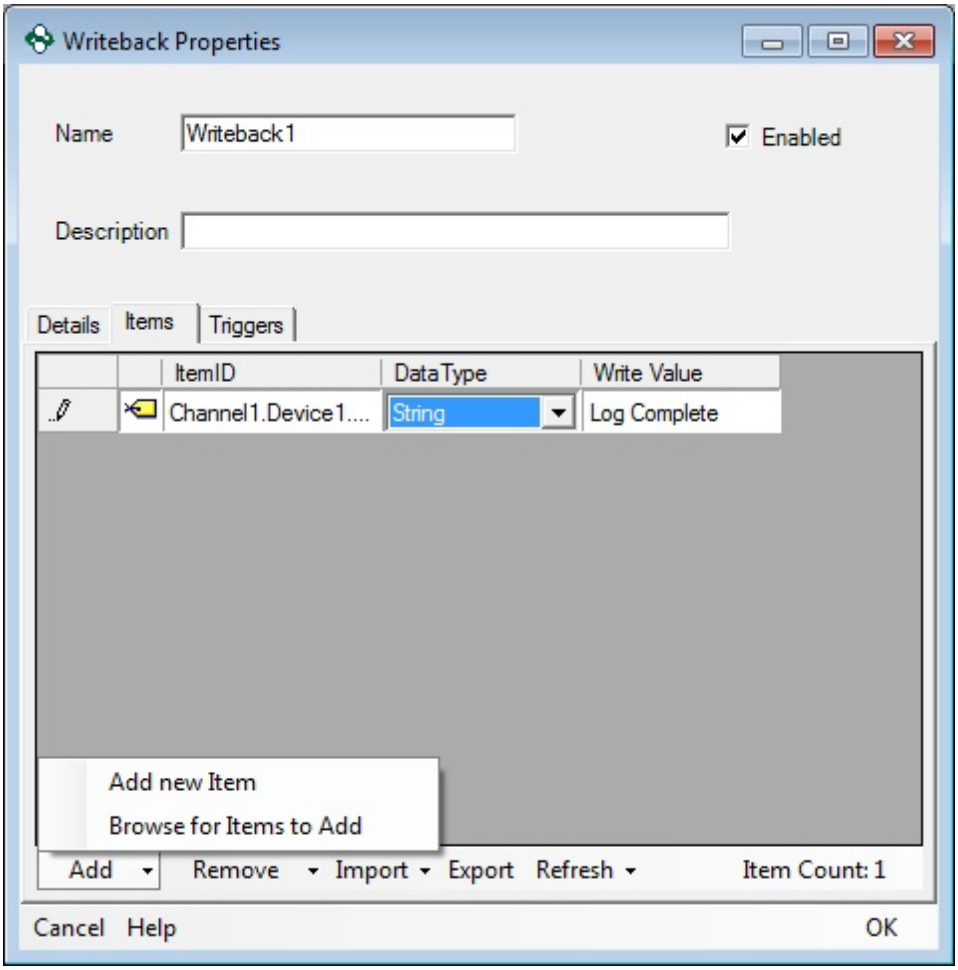

Triggers Tab

For more information on issuing a Writeback based on a Trigger refer to the Triggers section.

3.3.5.1.2 Removing a Writeback

Removing a Writeback from an OPC Data Logger configuration involves two steps; removing all references to the Writeback, and then deleting the Writeback from the tree view.

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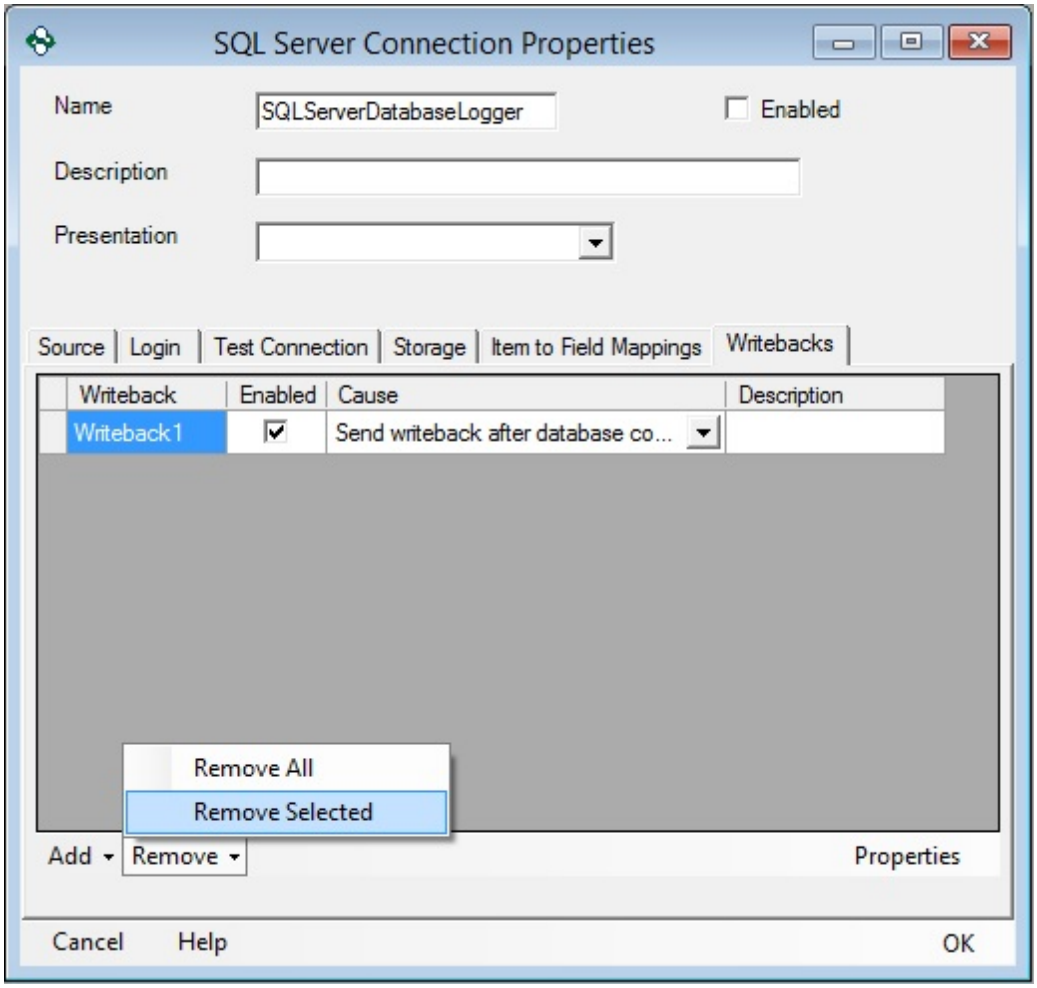
Removing Writeback References

To remove all references to a Writeback, the Writeback must be deleted from all Database and Text File Data Stores.

Open the properties of any Data Storage that reference the Writeback, and select the **Writebacks** tab. Select the Writeback that is being deleted and use the **Remove** button to remove the selected Writeback, or to remove all Writebacks.



NOTE: This will only remove the Writeback from being used in the specific Database or Text File Logger from which it was removed. It will leave the Writeback in the OPC Data Logger tree view allowing it to be used again in the future.

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Removing Writebacks in Tree-View

Right click on the Writeback in the OPC Data Logger tree view and select **Remove** to delete the Writeback from the configuration. If there are existing references to the Writeback an error will indicate why the deletion failed.

NOTE: This will completely DELETE the Writeback from the configuration.

3.3.5.2 Using Writebacks

3.3.5.2.1 Triggers

When configuring a Writeback, it is possible to configure a trigger directly in the Writeback configuration. This will issue the write back to the OPC Server whenever the trigger is raised, and not based on logging to the data storage.

NOTE: Triggers are optional when using a Writeback, and should be used with care – since a writeback could be issued without guarantee that the data was successfully logged.

Assigning a Trigger to a Writeback

1. In order to issue a writeback directly off a Trigger being raised, the Trigger must be added under the **Triggers** tab of the Writeback properties. The **Add** button will list all available Triggers, and more than one Trigger may be added to a single Writeback – in this case any Trigger being raised will issue the Writeback. For more information on adding a Trigger refer to the Triggers section.

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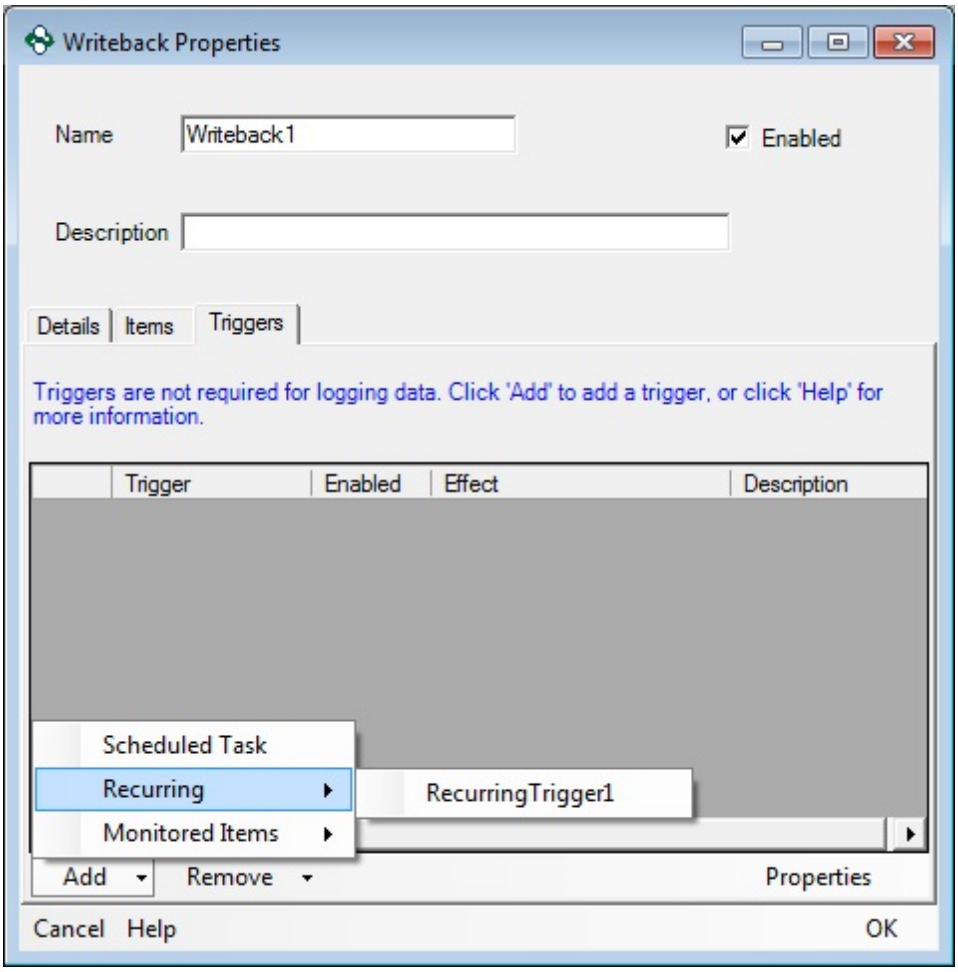

2. In order to issue the Writeback, the **Effect** will need to be set to **Write to Server**. The **Description** is optional, and can be used to describe the purpose of the Writeback.

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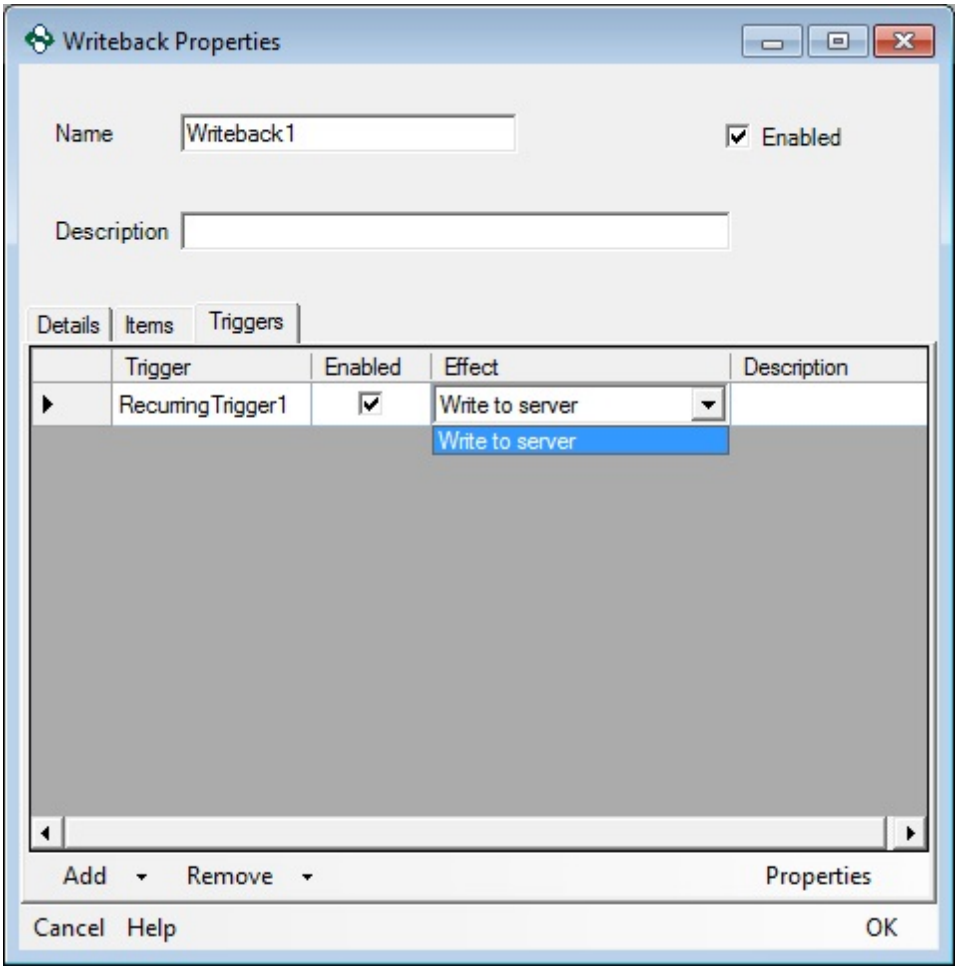

3. The selected Trigger(s) can easily be modified; Double clicking the Trigger in question, or highlighting the Trigger and pressing the **Properties** button, will open the corresponding Trigger.

3.3.5.2.2 Text Files

When logging data to a Text File Data Storage a writeback can be configured to send feedback information back to the data source; such as opening the Text File, closing the Text File, or after a data value was successfully logged to the file.

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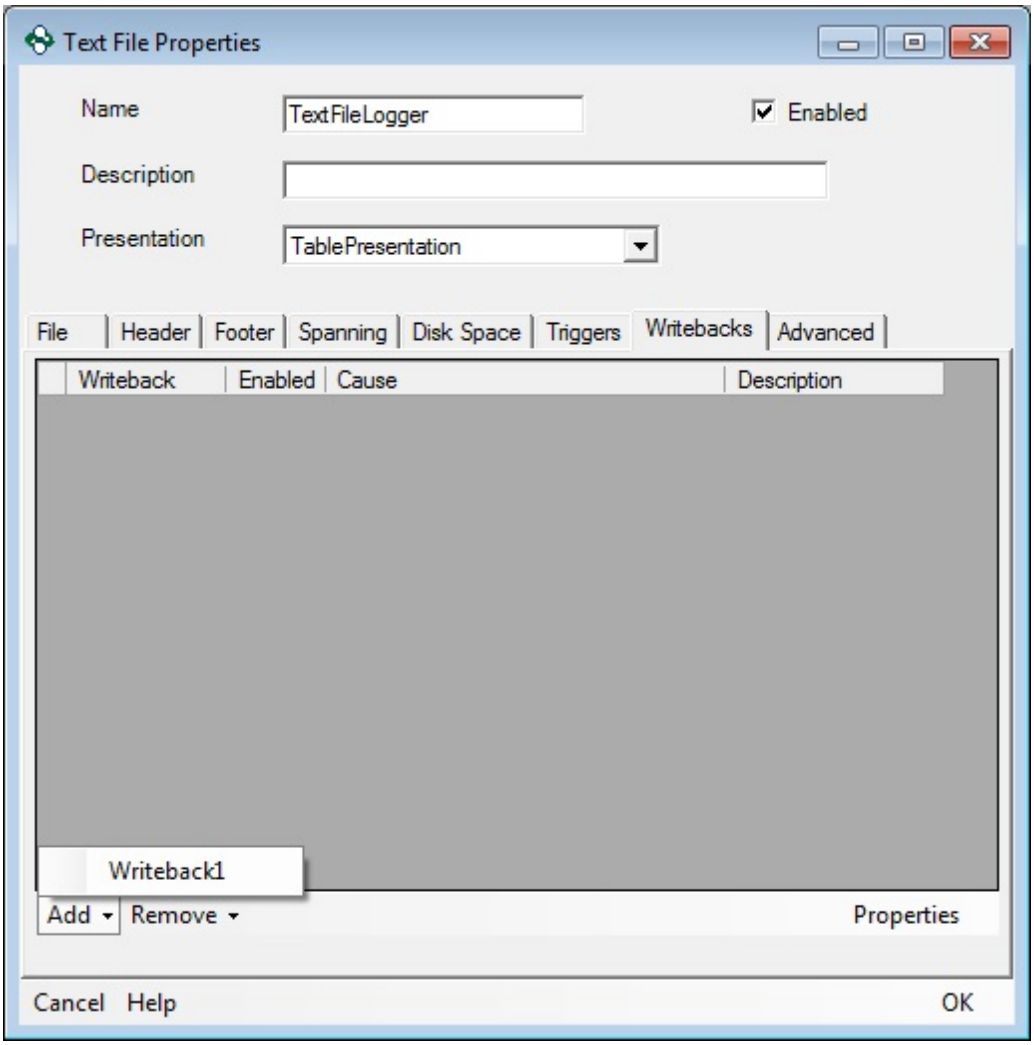
Adding a Writeback to a Text File

In order to configure a Writeback trigger in your Text File Data Storage a valid Writeback must be configured in the OPC Data Logger tree view under the Writeback section. Please refer to the Adding a Writeback section for more information on adding a new Writeback to the OPC Data Logger Project. The Data Storage must be a Text File Logger.

1. Right click (or double click) the Text File Data Storage to open the Text File Properties. To add a Writeback, use the **Add** button on the **Writeback** tab to select a Writeback from the list of valid Writebacks currently available in the OPC Data Logger configuration.



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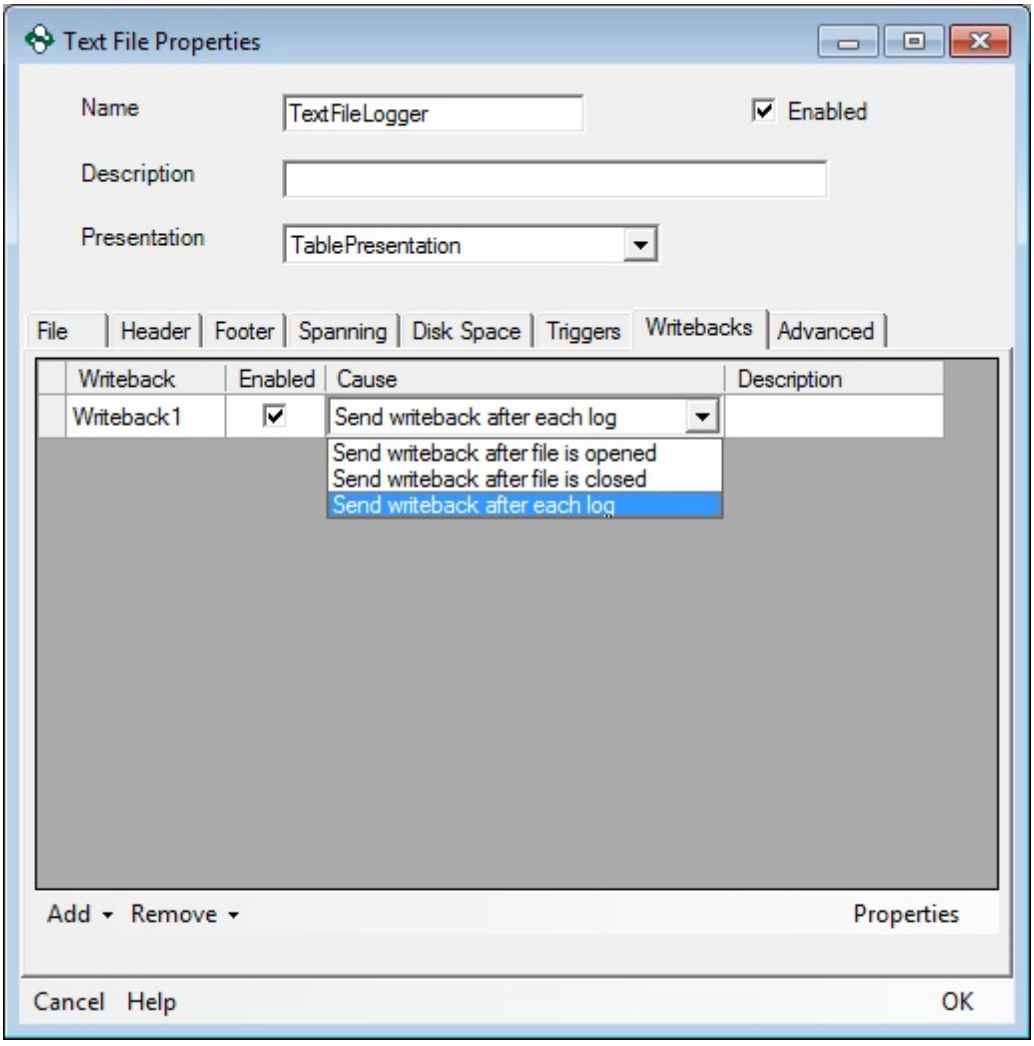
2. Once the proper Writeback is added the **Cause** field must be set to the appropriate trigger condition. Valid trigger conditions to issue the writeback are:

    - After the Text File is opened
    - After the Text File is closed
    - After each time that data is successfully logged

The Description field is optional, and can be used to give further information on the purpose of the trigger.



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Note: Double clicking the Writeback at any time will open the appropriate Writeback Properties Dialog

3.3.5.2.3 Databases

When using Database data storages, a writeback can be configured to send feedback information back to the data source.

Adding a Writeback to a Database

1. In order to configure a Writeback trigger in your Database Data Storage a valid Writeback must be configured in the OPC Data Logger tree view under the Writeback section. Please refer to the Adding a Writeback section for more information on adding a new Writeback to the OPC Data Logger Project.

2. In the Database Connection Properties the **Add** button on the **Writeback** tab will pull up a list of available Writebacks. Select the appropriate Writeback from the list.

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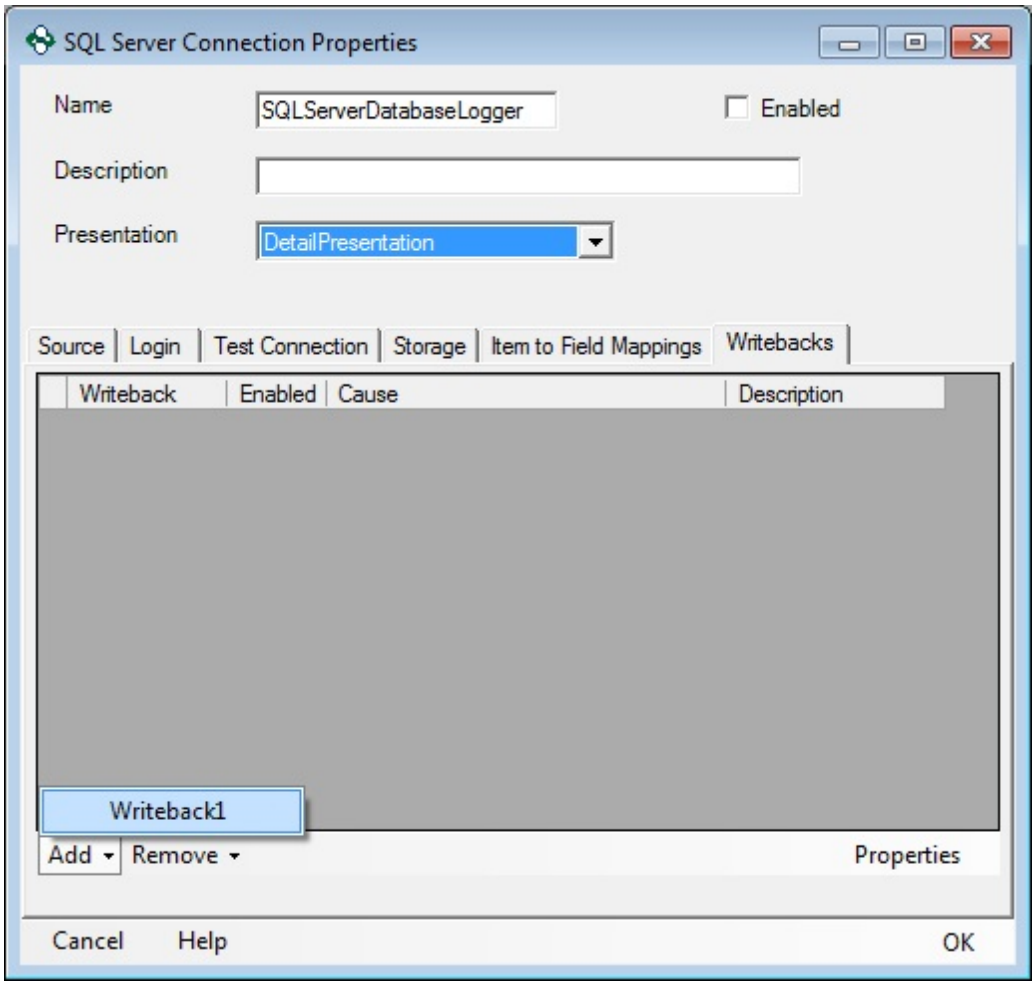

3. Once the proper Writeback is added the **Cause** field must be set to the appropriate trigger condition. Valid trigger conditions to issue the Writeback are:

   - After a connection is made with the database.
   - When the database connection is closed or lost.
   - After each time that data is successfully logged.

   The Description field is optional, and can be used to give further information on the purpose of the trigger.

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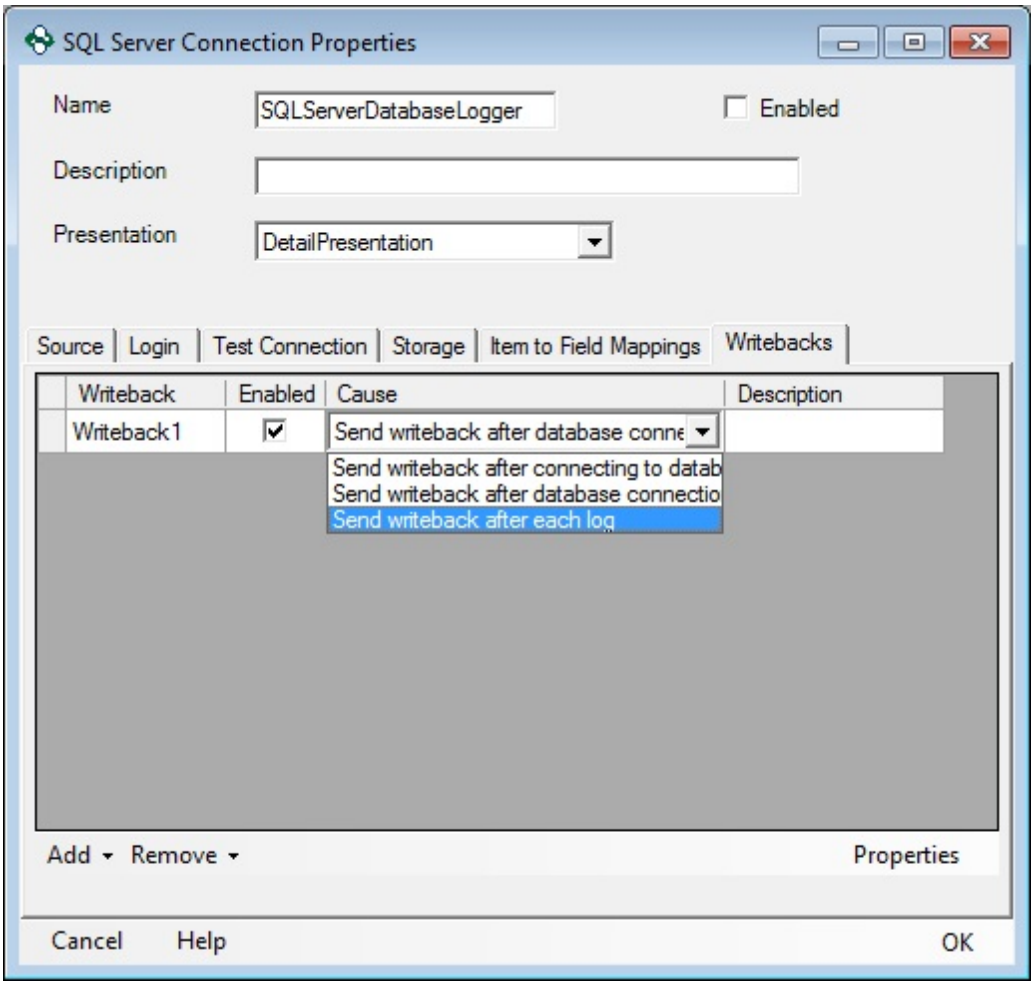

Note: Double clicking the Writeback at any time will open the appropriate Writeback Properties Dialog

3.3.5.3 Duplicate Writebacks

Duplicating existing writebacks:

1. Right-click on the existing Writeback and select "Duplicate".

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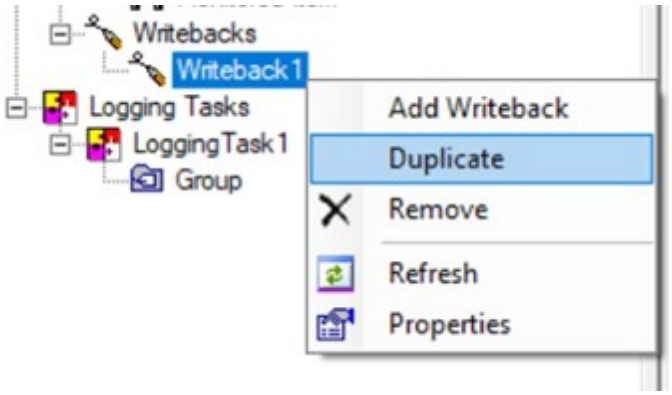
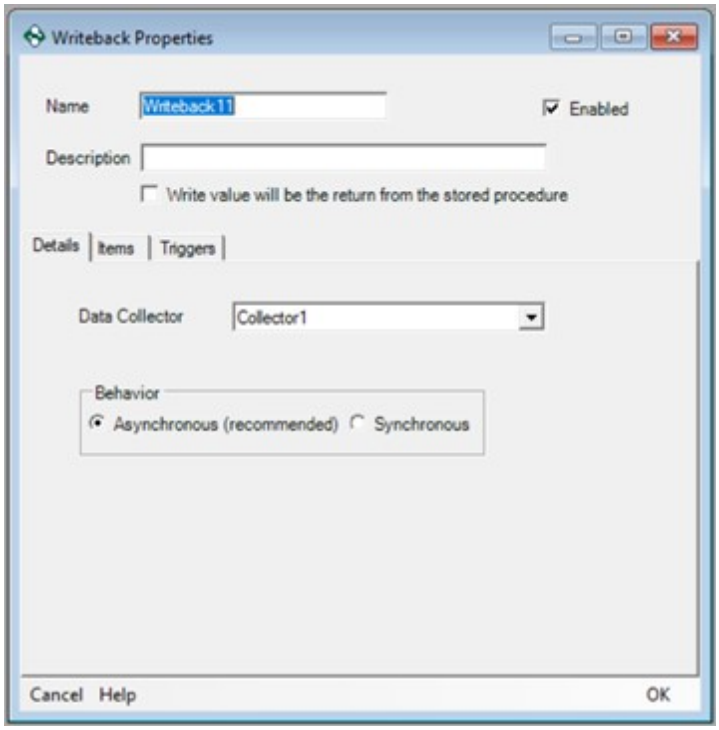


2. The new Writeback will be created with all the existing properties of the selected Writeback.



3.3.6 Logging Tasks

A Logging Task links a Data Collector with a Data Source; it also acts as the "container" for the groups, in which the items to be logged will be configured.

The Logging Task properties can be accessed by right clicking on Logging Tasks and selecting **Add**, or right clicking on an existing Task and selecting Properties.

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General Properties

The top of every tab in the Logging Task properties will display the Task name, Description, Data Collector, and the status for the selected Logging Task. These settings allow for configuration of the:

- **Logging Task Name:** The Logging Task name is user configurable, and will be how all other OPC Data Logger components reference the component.
- **Description**: The Description is optional, and is intended to provide an easily recognizable description for the Logging Task.
- **Data Collector**: The Data Collector determines the OPC Server from which the data will be collected. The drop down list will display all configured data collectors in the OPC Data Logger configuration – for more information on configuring an OPC DA Data Collector, or an OPC UA Data Collector, reference the corresponding section.
- **Enabled**: The Enabled check box determines the status of the Logging Task. A disabled Task will not be logged, and any associated groups will not be polled.

Group Properties

The *Groups* tab allows for creation and configuration of logging groups. Any groups that are configured here will be added to the OPC Server that is specified by the Data Collector specified for the Logging Task. A number of settings allow for the configuration of the groups:

- **Name**: The Group name is user configurable, and will be how all other OPC Data Logger components reference the Group.
- **Description**: The Description is optional, and is intended to provide an easily recognizable description for group.
- **Enabled**: The Enable check box allows for control of which groups are active, and will be logged. Any inactive groups will not be read from the Data Collector.
- **Scan Rate**: Determines the rate at which data points in the corresponding group will be subscripted to, in the OPC Server. In

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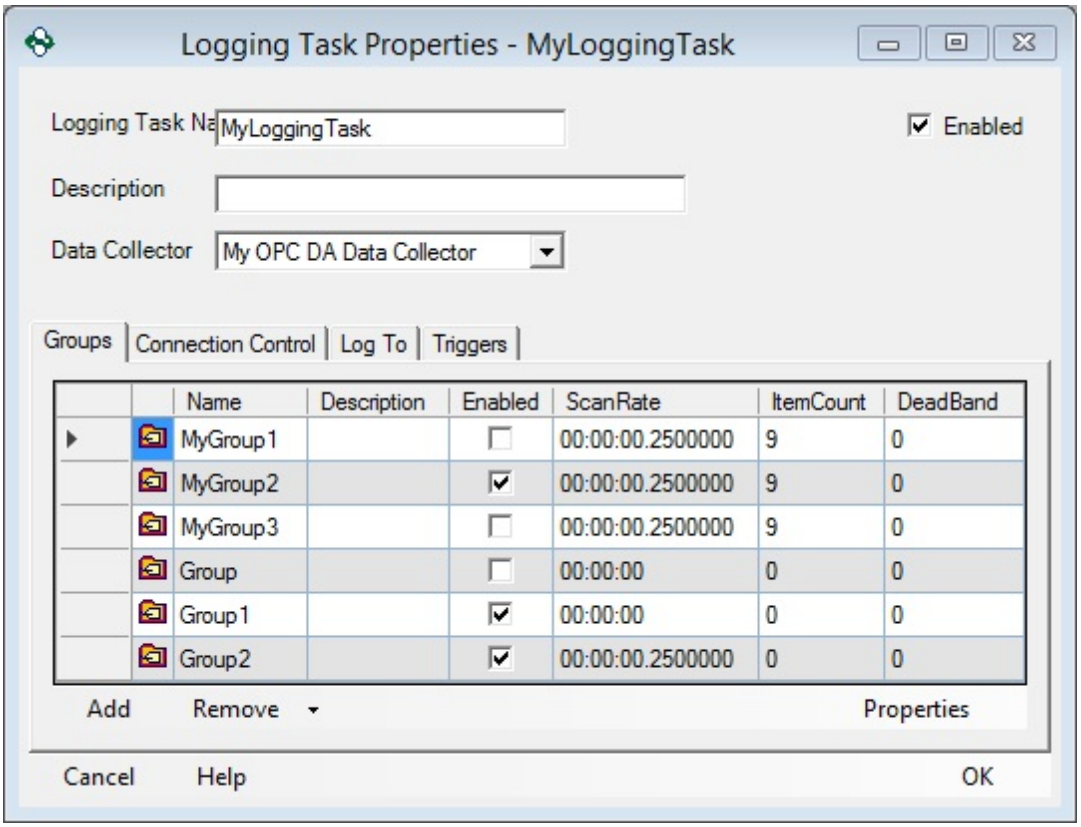
cases were timer or trigger based polling is used, the Scan Rate will not matter.

- **Item Count**: Displays the total number of items within the group.
- **Deadband**: The Deadband determines the percent change at which the OPC Data Logger treats a new value as significant. A deadband value of 10 would require any new value to be at least 10% different from the original value, before the OPC Data Logger treats it as a new and logs it.



- **Add**: The Add button creates a new group for the current Logging Task. Groups added this way will be empty, and will need to be configured manually.
- **Remove**: Allows for the removal of all groups in the Logging Task, or for removal of only the highlighted group.
- **Properties**: This button opens the properties page for the highlighted group. Double clicking a group in the list will also open the properties page.

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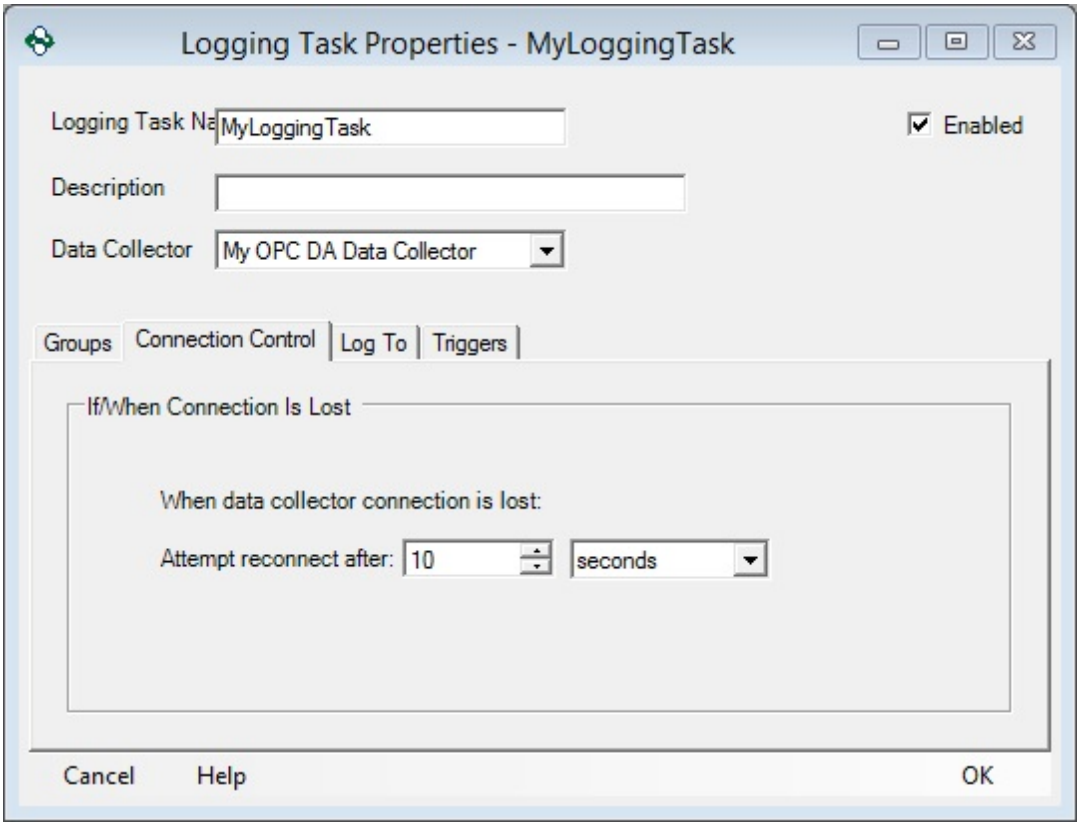
For more information refer to the Groups section.

Connection Control Properties

The timing setting here sets the interval at which the OPC Data Logger will attempt to reconnect to an OPC Server, in case of a loss of connection. The default of 10 seconds means that the OPC Data Logger will attempt to reestablish communications to the OPC Server every 10 seconds in case of a disconnect.



Log To Properties

The *Log To* tab shows the Data Storage(s) to which this Logging Task will be logged. While a Task can only have a single Data Collector, it can be configured to log to any number of Data Storages.

- **Data Store Name**: This show the name of each Data Storage that has been associated with the Logging Task. These values are read only, and will reflect the name given to the

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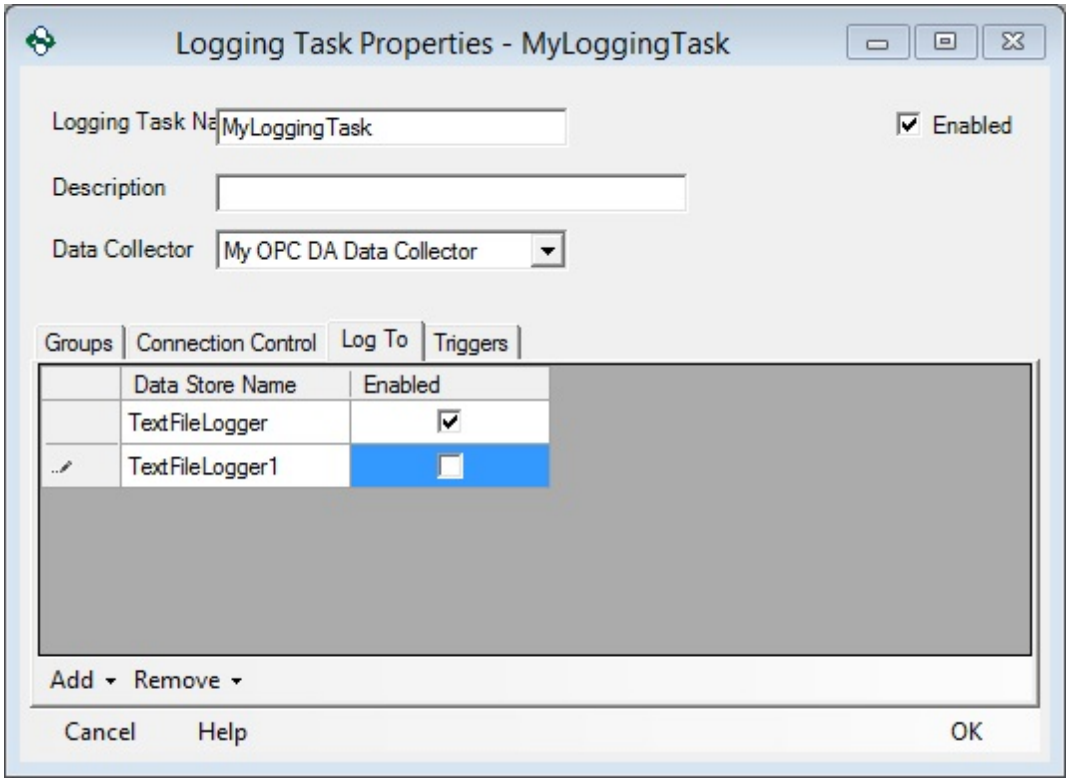
corresponding Data Storage during configuration. There is no limit to the number of Data Storage that can be added to a Logging task, but at least one is required in order to log data.

- **Enabled**: The Enabled check box allows for easy manipulation of the status of each Data Storage. An added Data Storage can be set to inactive, and no logging will take place.



- **Add**: The add button displays all Data Storages that have been created in the OPC Data Logger configuration, and associates the selected one with the Logging Task.
- **Remove**: The Remove button allows for removal of all associated Data Storages, or of removal of only the one currently selected.

Trigger Properties

- **Let triggers initiate logging**: The Let Triggers initiate logging checkbox, when checked, allows configured triggers to Start and

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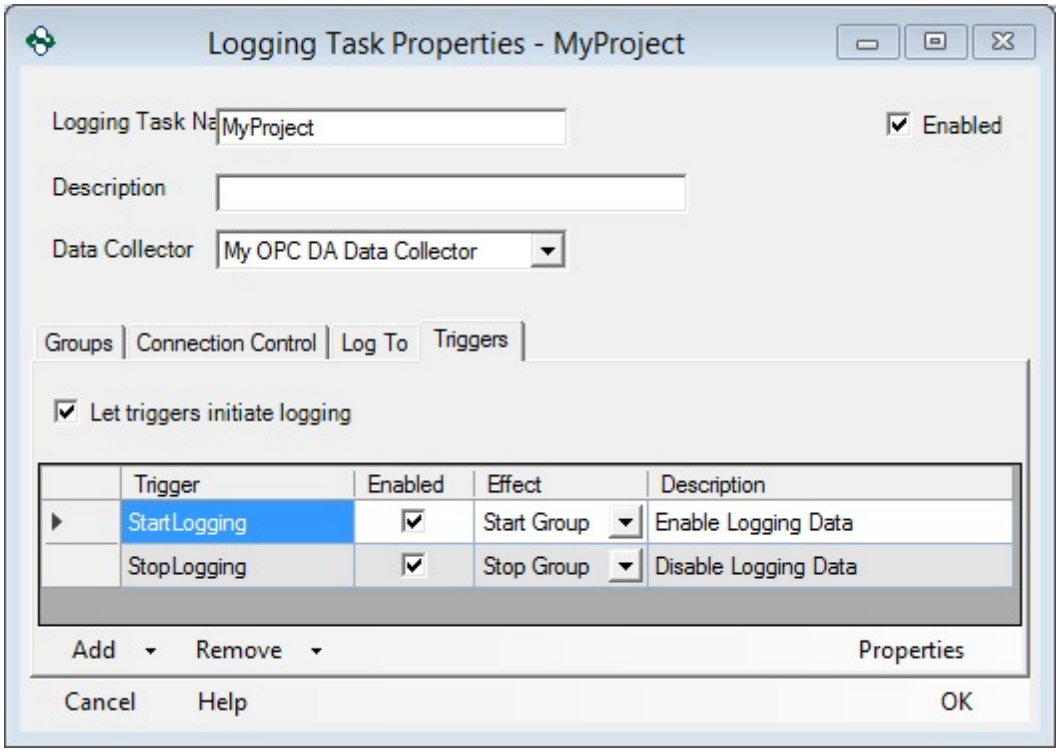
Stop data logging for the Logging Task. Logging will not start until a trigger fires to explicitly start logging.

- **Trigger**: This column displays the triggers that have been associated with the Logging Task. The displayed name will be Read Only, and will match the name configured for the Trigger in the OPC Data Logger configuration.
- **Enabled**: This checkbox Enables and Disables the associated trigger, negating the configured Effect.
- **Effect**: This drop down selects the desired effect, when the associated trigger fires. *Start logging data* starts data logging for the Task, while *Stop logging data* disables data logging.
- **Description**: The Description field can be used to display a user defined description of the Logging Task.



- **Add**: List all available Triggers, in the OPC Data Logger configuration, and adds the selected trigger to the Logging Task.
- **Remove**: Removes all Triggers associated with the Logging Task, or only the one currently selected.

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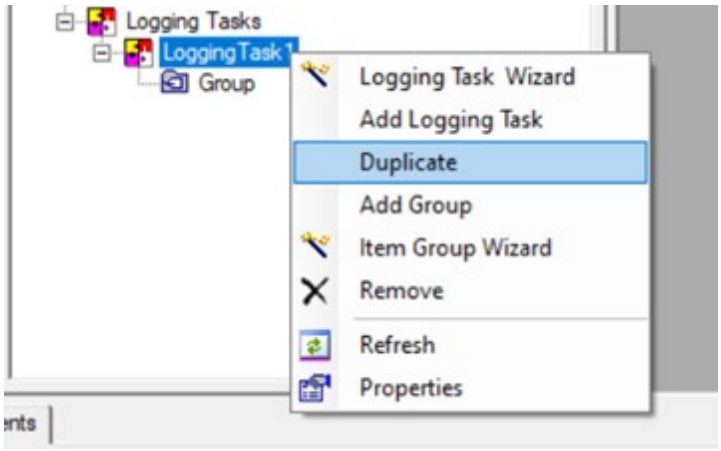
- **Properties**: Opens the properties page for the highlighted trigger; double clicking a trigger in the list will also open the properties page.

3.3.6.1 Duplicate Logging Task

Duplicating a Logging Task:

1. Right-Click on the existing Logging Task and select "Duplicate".



2. The new Logging Task will be created with all the existing properties of the selected Logging Task.

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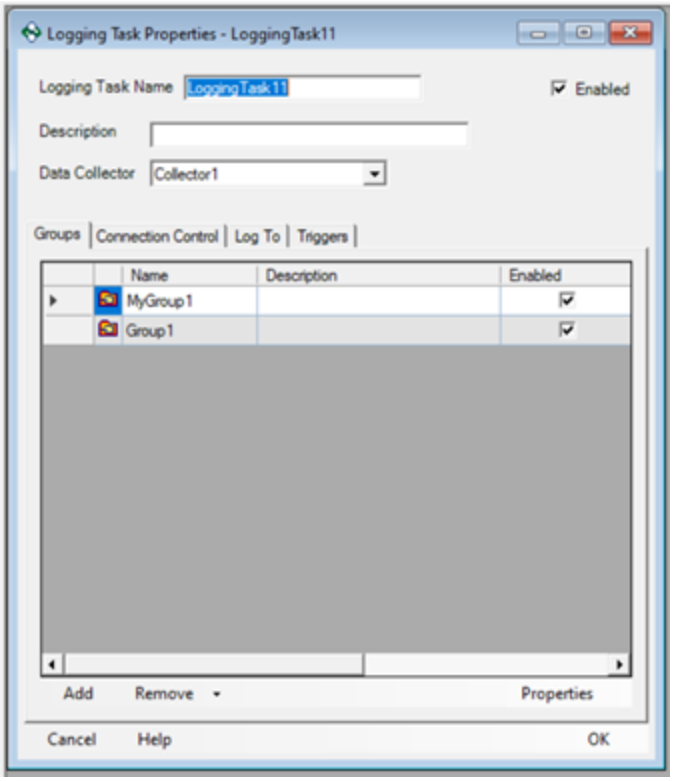

3.3.7 Groups

A group is the container that holds the OPC Items for logging. It specifies the items that should be logged, the read method with which the items should be read from the data source, and whether any triggers will be used to affect the group.

The Group Properties window can be opened by first opening the Logging Task properties window, highlighting a Group in the Groups Tab, and then choosing the Properties option or by double clicking on the group. The Group properties can also be accessed by double clicking on the Group name in the OPC Data Logger tree view.

General Properties

- **Group Name**: The name of this group. This will be how the Group appears in the OPC Data Logger tree view.
- **Description**: (Optional) A simple description of the group.

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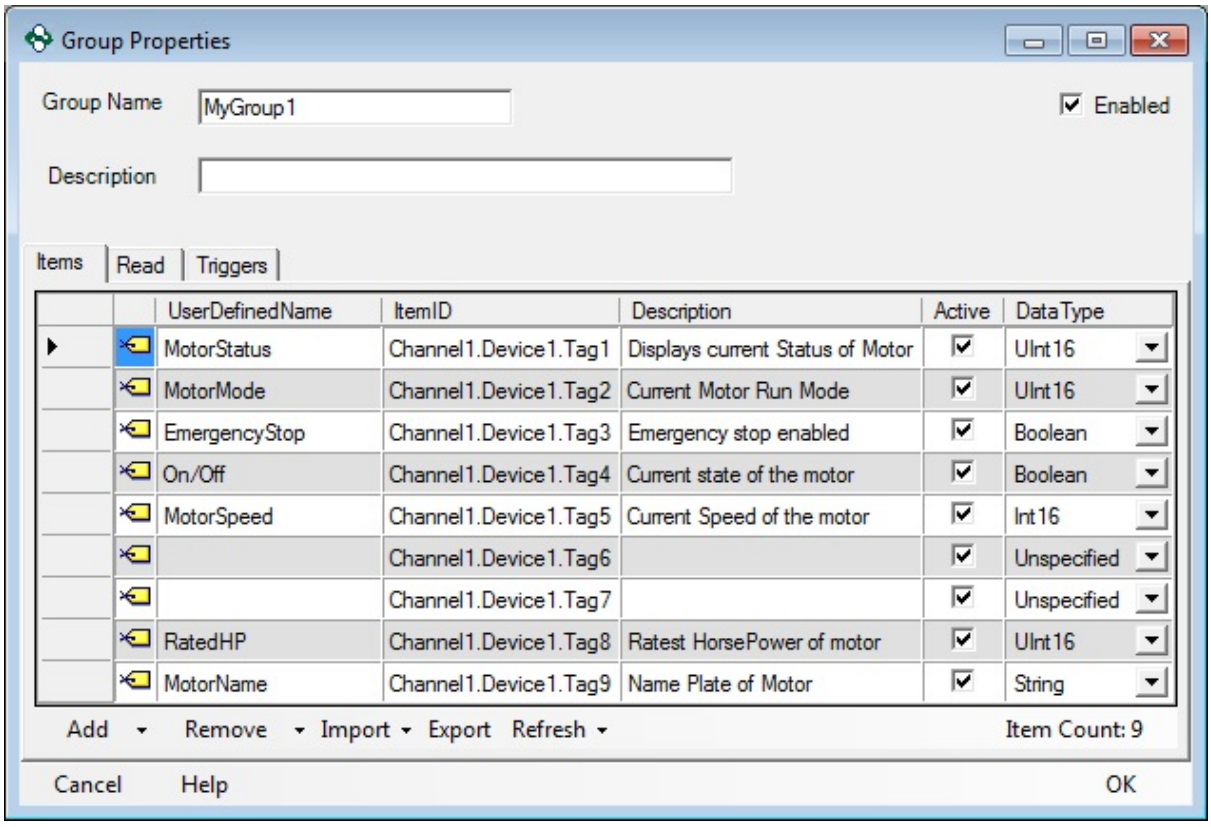
Items Tab

This tab contains a list of the names of the items that will be logged according to the settings for this group.



- **UserDefinedName**: (Optional) A name that can be given to the item that the user determines.
- **ItemID**: The name of the item that you want to log – this will generally be the path to this item in the OPC Server.
- **Description**: (Optional) A description of the item.
- **Active**: Whether or not the item is active. When unchecked the OPC Data Logger will not collect data for this tag.
- **Data Type**: (Optional) The data-type of the item. This is automatically set when importing items from your data source and does not generally have to be set manually.

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Actions:

- Add Menu
  - **Add new Item**: Manually adds an item to the list.
  - **Browse for Items to Add**: Opens the Group and Item Browser dialog to browse the data source and select items to be added to the group.
- Remove menu:
  - **Remove All**: Removes all of the items in the list.
  - **Remove Selected**: Removes all items that have been highlighted in the item list.
- Import menu:
  - **Import from File menu:**
    - *Data Logger (*.csv)*: Allows you to import items that were previously exported from the OPC Data Logger application.
    - *TOP Server (*.csv)*: Allows you to import items that were previously exported from the Software Toolbox TOPServer OPC Server.
  - **Import directly from Server**: This option will try to perform an automatic detection and import of items directly from the data source itself.
- **Export**: Can be used to export the item list for this group to a CSV file.
- **Refresh menu:**
  Can be used to set an auto-refresh rate for the item list.
  - Refresh every 1-second
  - Refresh every 5-seconds
  - Refresh every 10-seconds
  - Stop Auto-Refreshing
  - Refresh Now

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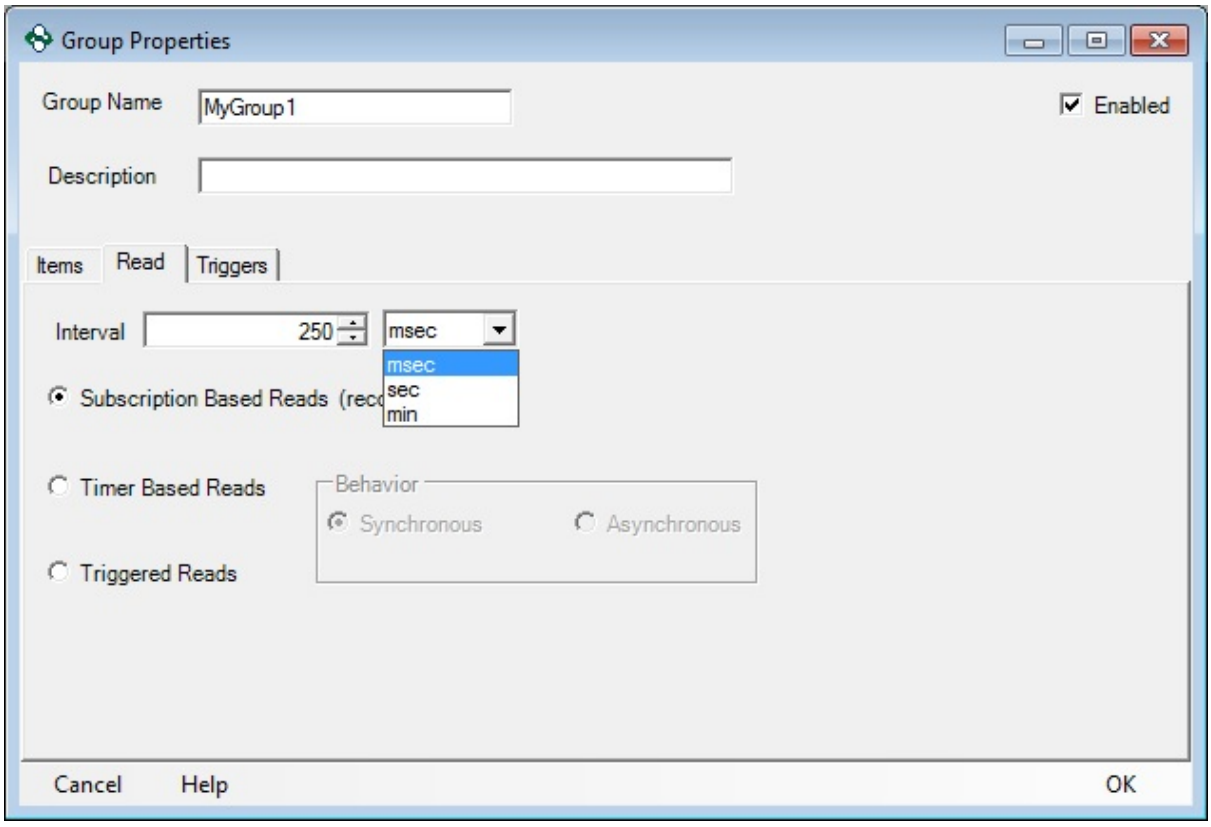
Read Tab

Specifies by which means the items configured in this group will be read from the Data Source.



- **Interval**: For Subscription or Timer based reads, the interval with which the data will be requested from the OPC Server. Can be specified in msec, sec or min.
- **Subscription Based Reads**: This is the recommended read method to be used with OPC Data Logger groups. Subscriptions use a "report by exception" philosophy, where the OPC Data Logger requests a update rate (determined by the Interval) at which the OPC Server polls the device, and the Data Source will notify the OPC Data Logger when the value is different.
- **Timer Based Reads**: Timer based reads will issue a manual read of all items in this group, at the specified time interval. Unlike Subscriptions, a timer based read will log the value at every interval – even when the value has not changed.

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- **Triggered Reads**: Triggered reads will wait for a Trigger to be raised in the OPC Data Logger before reading the data.
- **Behavior section**: When using Timer or Triggered reads, the type of read method can be set:
  - **Asynchronous**: Each read will be performed asynchronously, and not block the OPC Data Logger while waiting on the value to be returned. Each read request will be issued to the data collector, with the value being returned whenever the read completes.
  - **Synchronous**: Each read will be done synchronously, and the connection between the OPC Data Logger and the data source will be "blocked" while the OPC Data Logger waits for the read to complete and the value to be returned. Synchronous reads are the most reliable, but also the most expensive in terms of resources.

Triggers Tab

Triggers can be used to affect the normal operation of an OPC Data Logger Group. Please refer to the Triggers section for specific information on configuring a Trigger in the OPC Data Logger.

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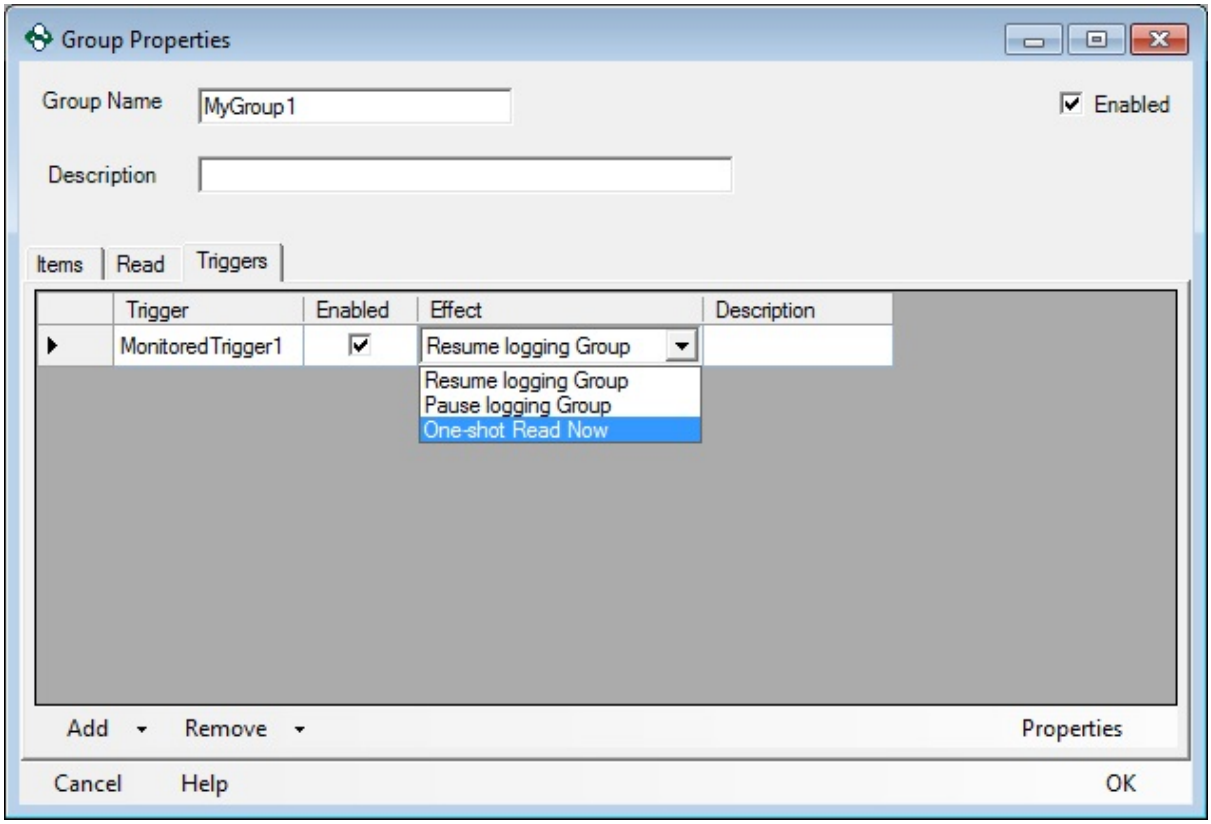

The **Add** button can be used to add a valid Trigger to the list. Multiple Triggers can be added to the Group.

The effects field must be used to determine what effect the Trigger will have on the Group:

- **Resume Group**: Enables the group for data collection. During runtime, this will cause items to start being polled by the data collector.
- **Pause Group**: Disables the group for data collection. During runtime, this will cause items that are being polled by the data collector to be suspended.
- **One-shot Read Now**: Requests that the OPC Data Logger perform a one-shot read of all the items within the group immediately.

3.3.7.1 Manually Choosing Items to Add

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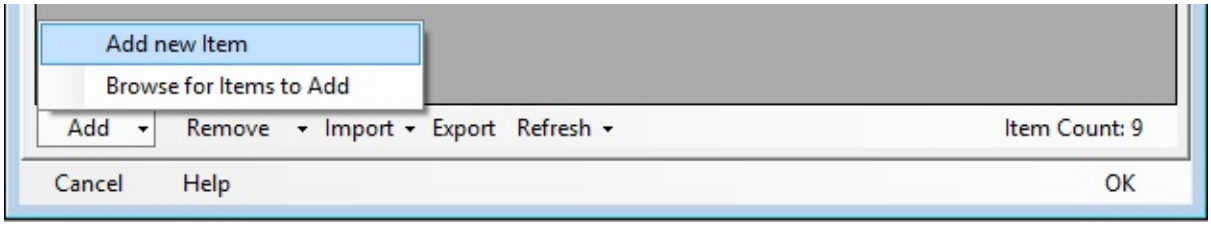
When adding OPC Items from an OPC Server manually, there are two methods of choosing items to add.

Manually entering ItemID

Anytime an OPC Item is referenced in the OPC Data Logger, the tag can be added manually by entering the fully defined Item ID for the tag. Pressing the **Add** button, and selecting the Add new Item option will create a new, blank, item entry.

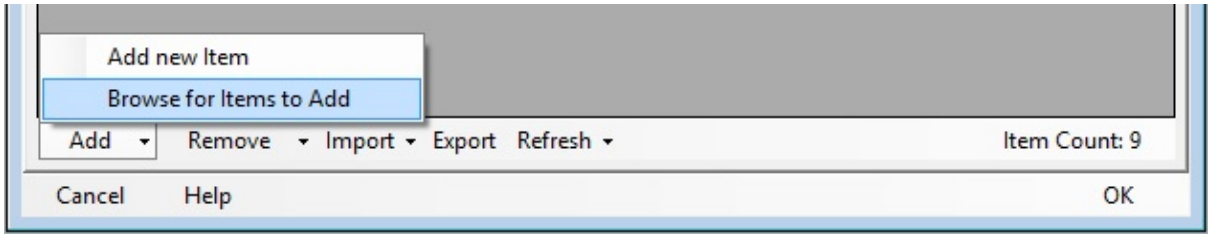


A fully defined ItemID generally take the form of:

<Channel Name>.<Device Name>.<Tag Name>

Browsing the OPC Server (Recommended)

In place of manually adding an item, the OPC Item Browser can be used to browse the OPC Server and select items to be added to the OPC Data Logger. Pressing the **Add** button, and selecting the *Browse for Items to Add* option will bring up the OPC Item Browser.



The Item Browser will browse the groups and items in the OPC Server, and add selected items to the OPC Data Logger.

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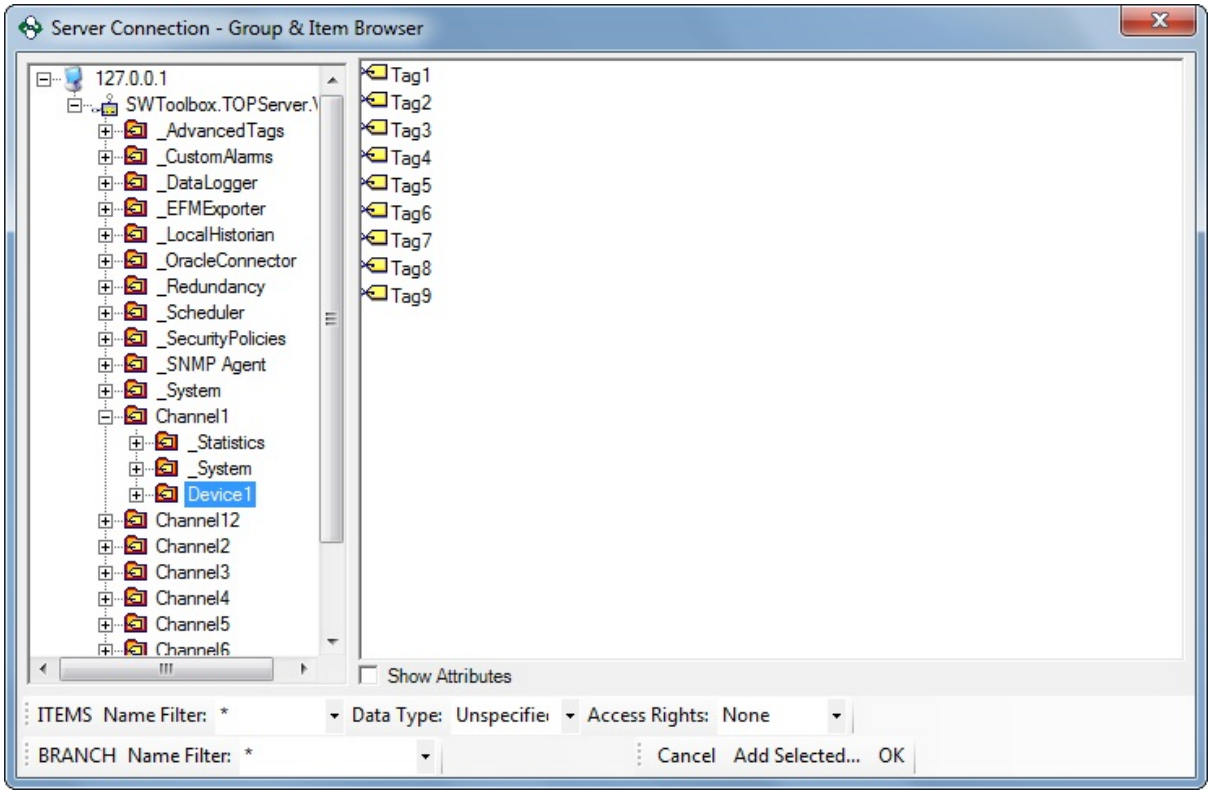

There is no limit to the number of tags that can be added simultaneously, and the Browser can be used to select a range of tags. If adding tags from more than one location, the **Add Selected** button can be used to add the currently selected items to a list of tags to be added when the Browser is closed.

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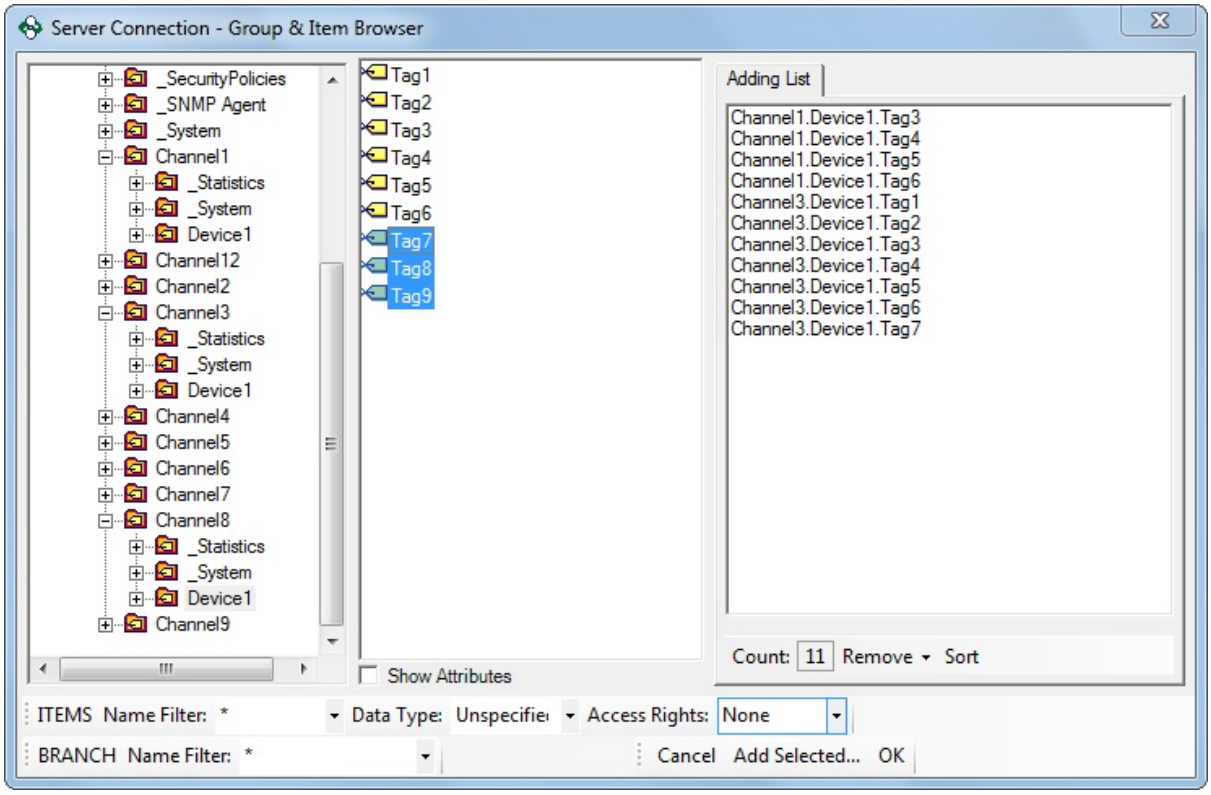

The OPC Item Browser also has the ability to show a number of attributes associated with the highlighted item. Checking the **Show Attributes** checkbox will populate a list with details pertaining to the selected items.

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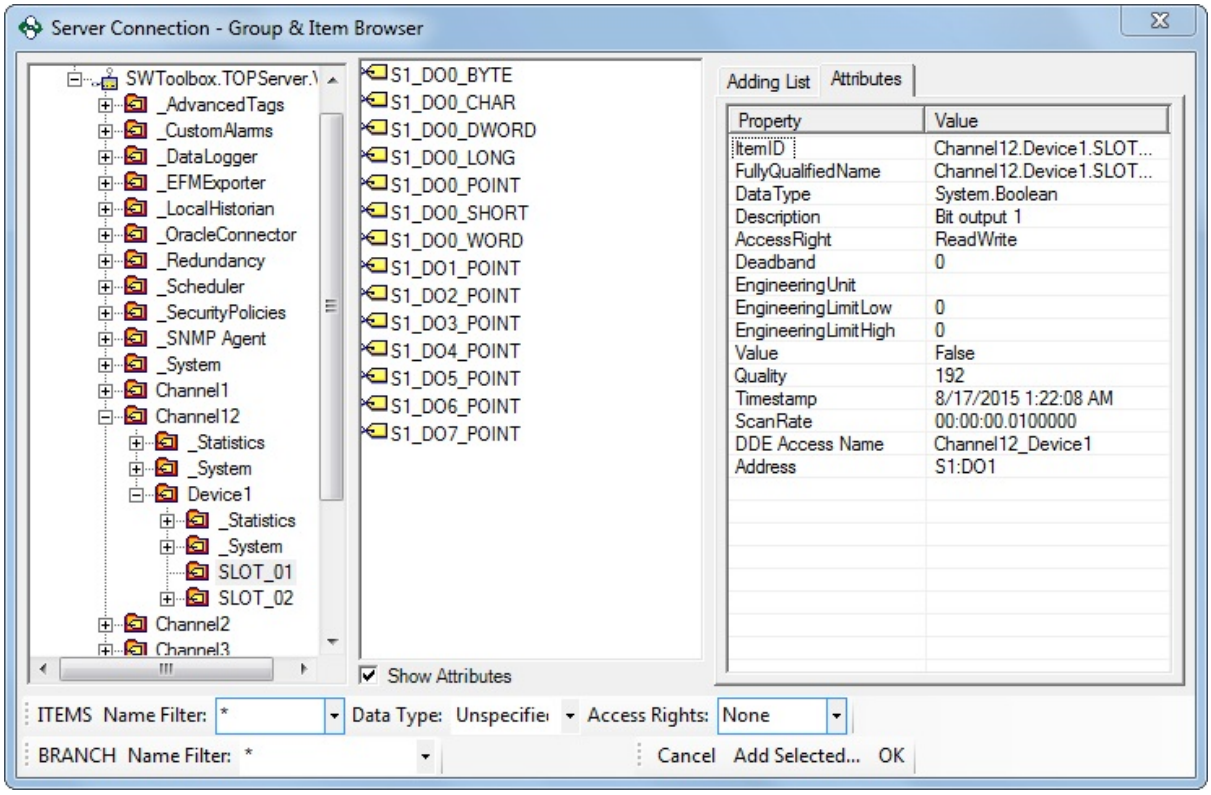

Note: When browsing item properties it will be necessary for the OPC Item Browser to make additional calls to the data source to request the values of these attributes

3.3.7.2 Auto-Importing Items from the Data Source

When adding items to a group the OPC Data Logger supports importing data items directly from the OPC Server, by selecting the **Auto import from Data Source (Server)** option in the Item Group Wizard.

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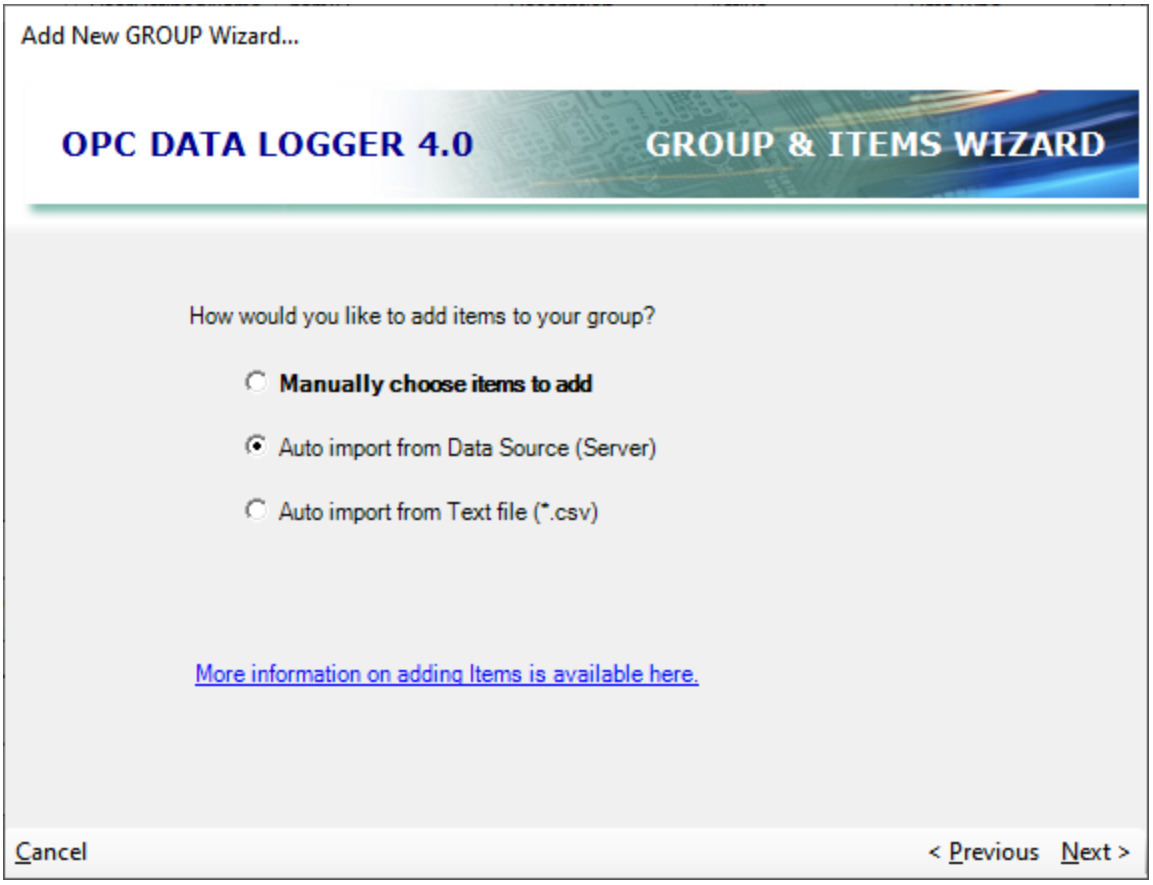
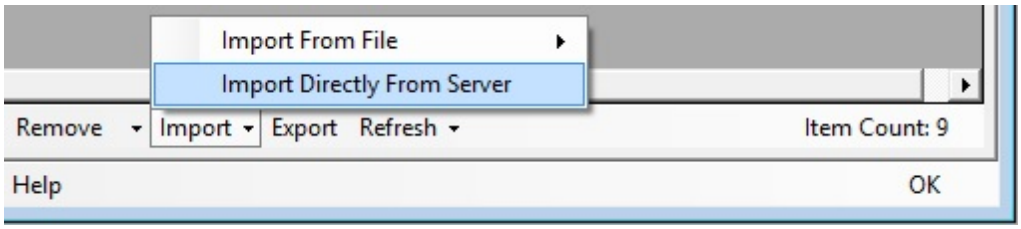


Alternatively, items can be automatically imported to an existing group by selecting the **Import Directly From Server** option in the **Import** dropdown of the Group properties window.



Item Properties

When checked, the **Query Item Properties** checkbox will attempt to read all item properties (such as Descriptions, Data Types, Engineering Units, scaling max/min, etc) from the OPC Data Source. This setting is

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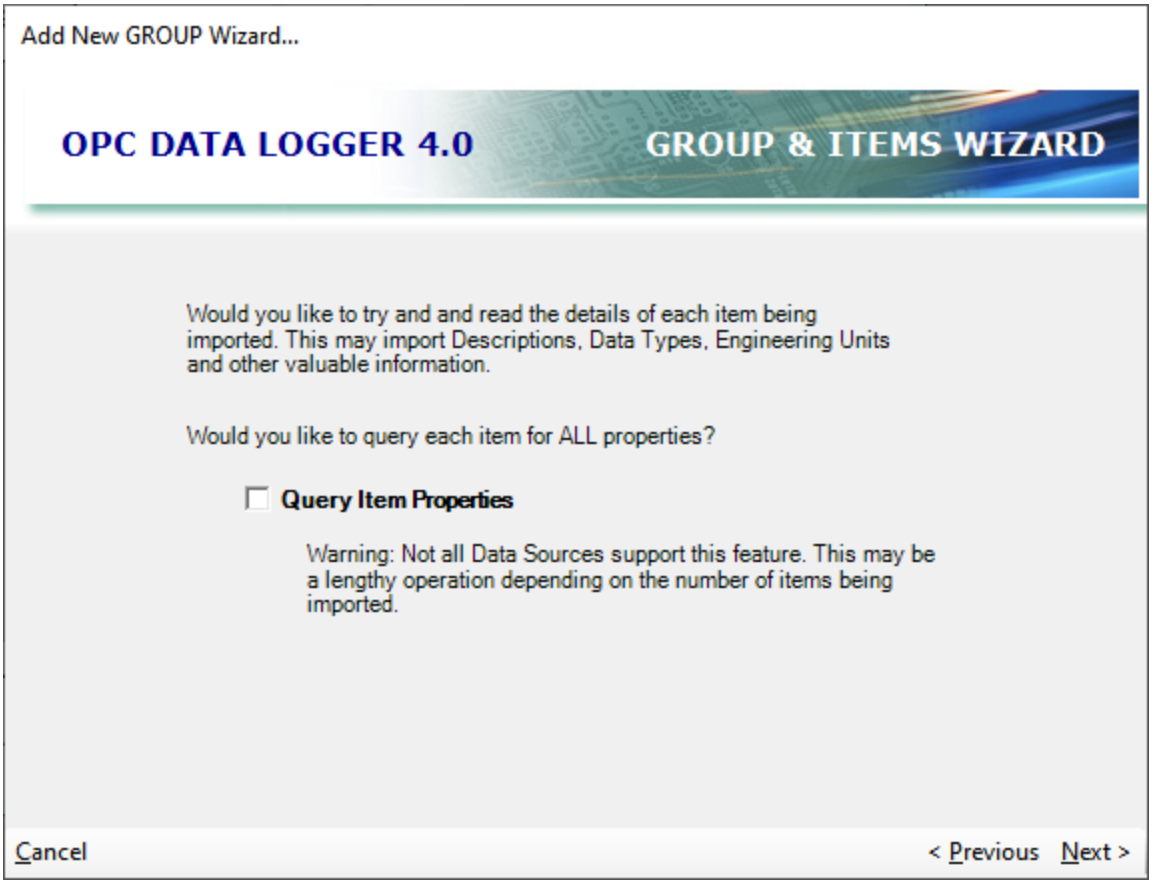
disabled by default since not all OPC Servers support client browsing of item properties.



Choosing Items to Import

The OPC Data Logger supports automatic tag import in one of two ways:

- **Import ALL items**: This option will import every item available in the OPC Server, including any system tags that the Server might have.

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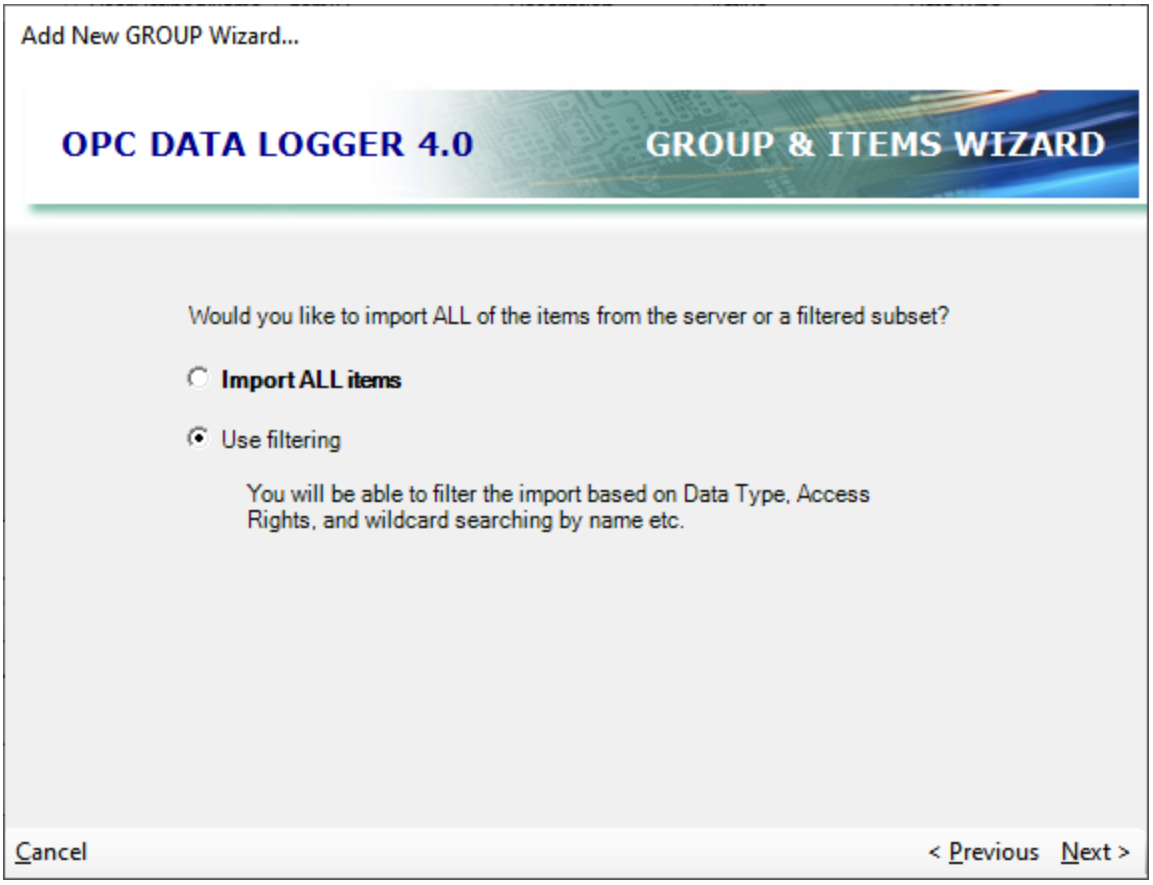

- **Use filtering**: Selecting this option will bring up the filtering dialog and only import items that match the specified criteria.
    - **Item Name**: Will only import items that match the specified name, the Asterisk '*' can be used as a wildcard character.

      Example:

      Alarm* - would import any tag beginning with the word "Alarm"

      *Alarm - would import any tag ending with the word "Alarm"

      Alarm - would import any tag containing the word "Alarm"

      Alarm - would only import any tag named "Alarm"

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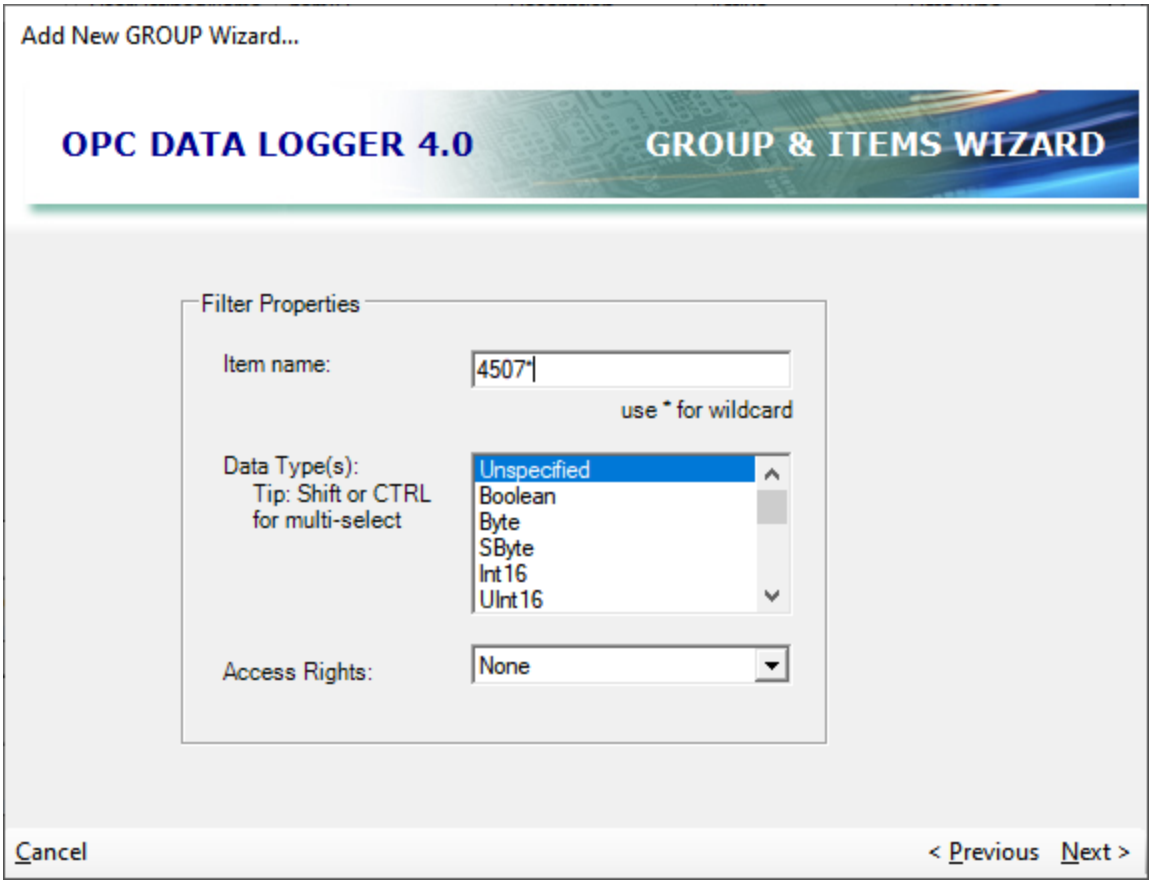
- **Data Type**: Specifies the data type(s) that will be imported. An item must be of one of the selected data types in order to be imported.
- **Access Rights**: Specifies the access rights (ReadOnly, WriteOnly, or ReadWrite) of the items to be imported.



3.3.7.3 Auto-Importing Items from a CSV File

When adding items to a group, the OPC Data Logger supports importing data items form a CSV file, by selecting the **Auto import from Text file (*.csv)** option in the Item Group Wizard.

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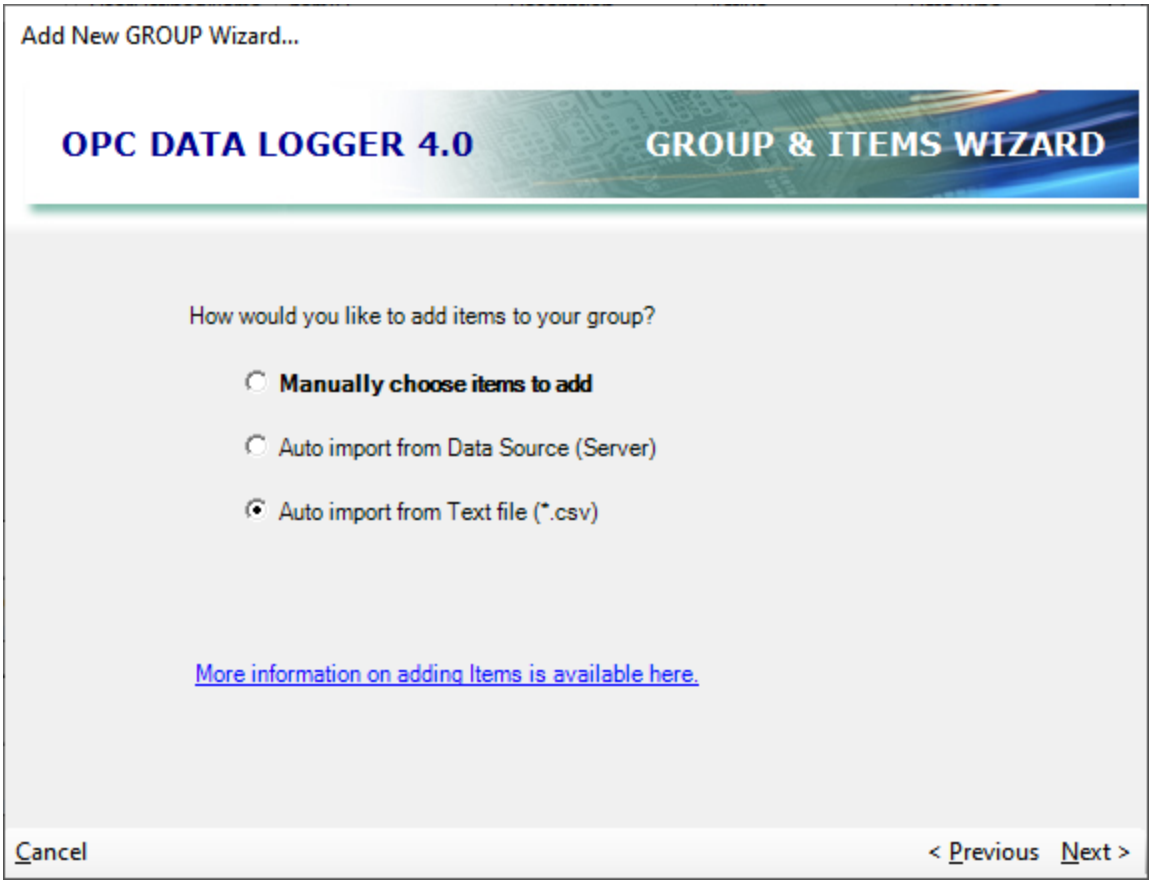
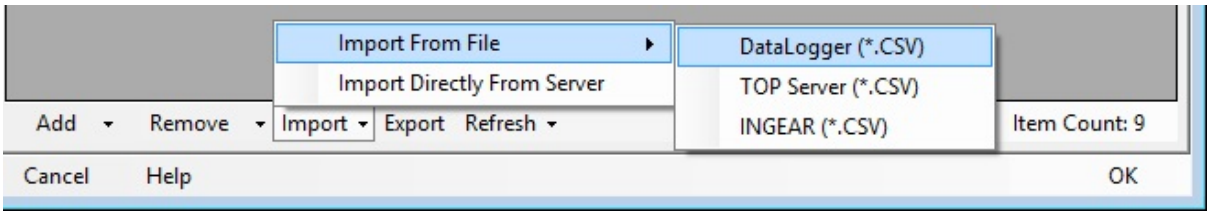


Alternatively, items can be imported to an existing group by selecting the **Import From File** option in the **Import** dropdown of the Group properties window – selecting the appropriate file format.



File Format

The file type drop down must be used to select the CSV format that will be imported. The OPC Data Logger currently support importing Data Items from CSV files generated by the OPC Data Logger, and by the Toolbox OPC Power Server (TOP Server).

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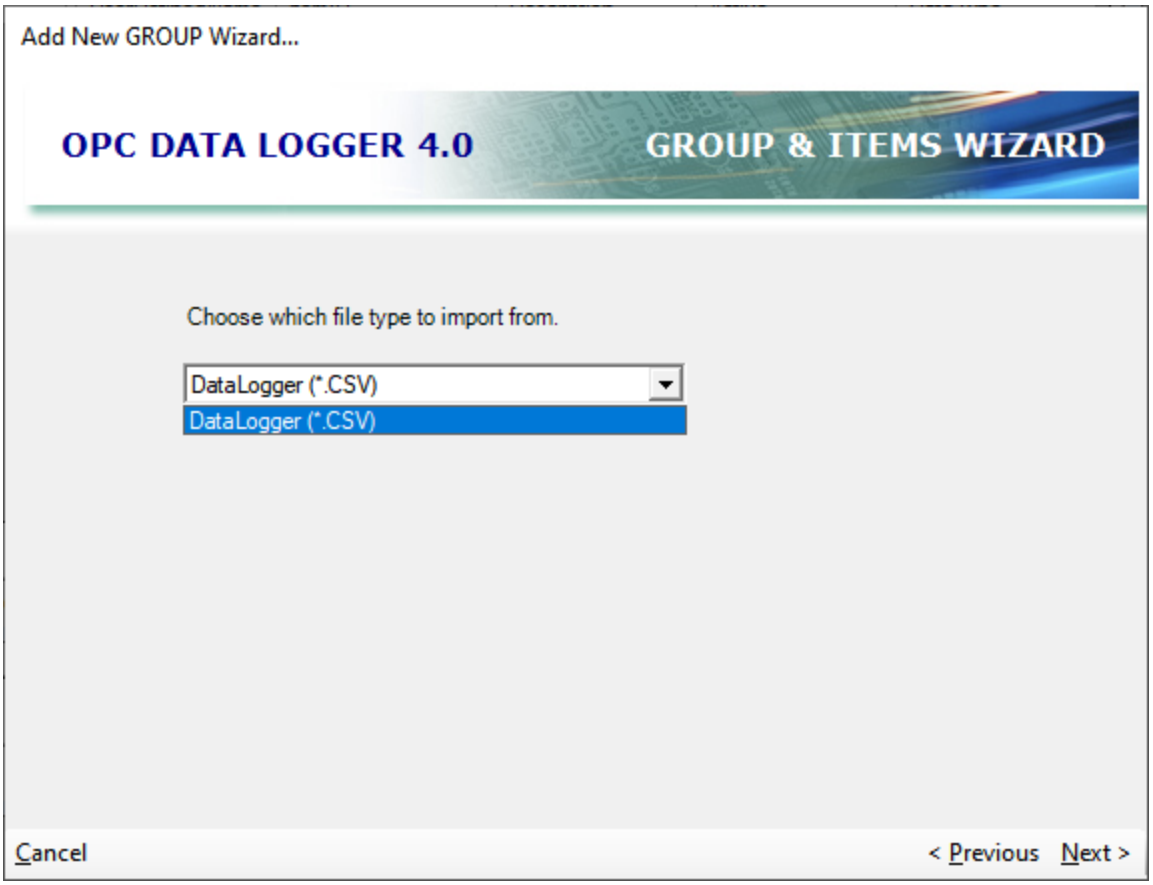

Choosing a file to import

The **Import** button will bring up a browse dialog box to browse to the CSV file to be imported.

Once the import is complete, the OPC Data Logger will show how many items were imported – the **Show Imported Items** checkbox can be used to view all items that were imported. With very large item lists this may take a few seconds.

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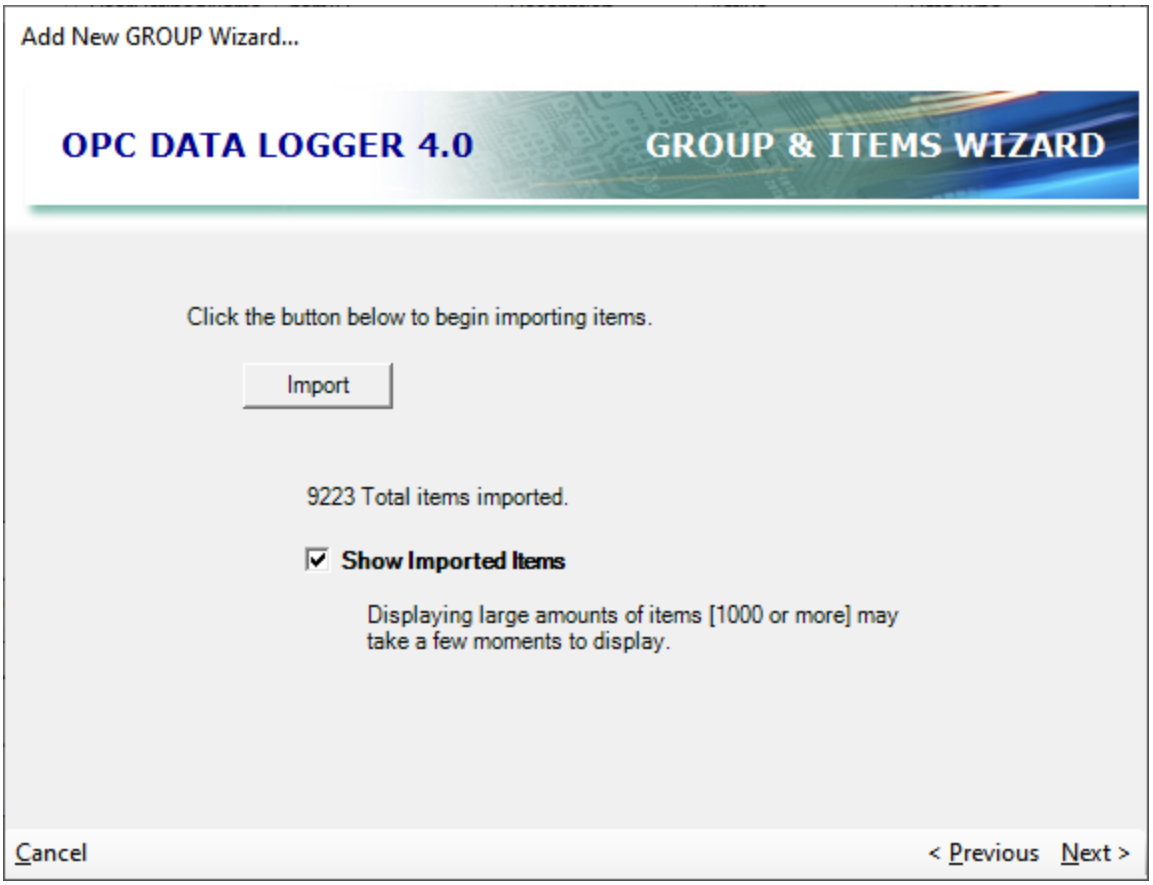
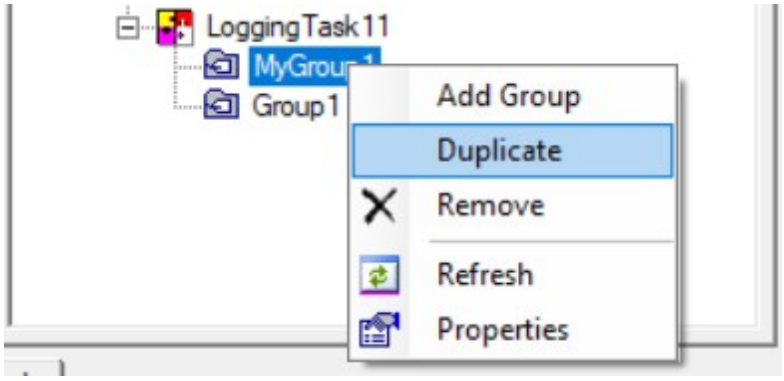


3.3.7.4 Duplicate Group

Duplicating an existing Group:

1. Right-Click on the existing Group and select "Duplicate".



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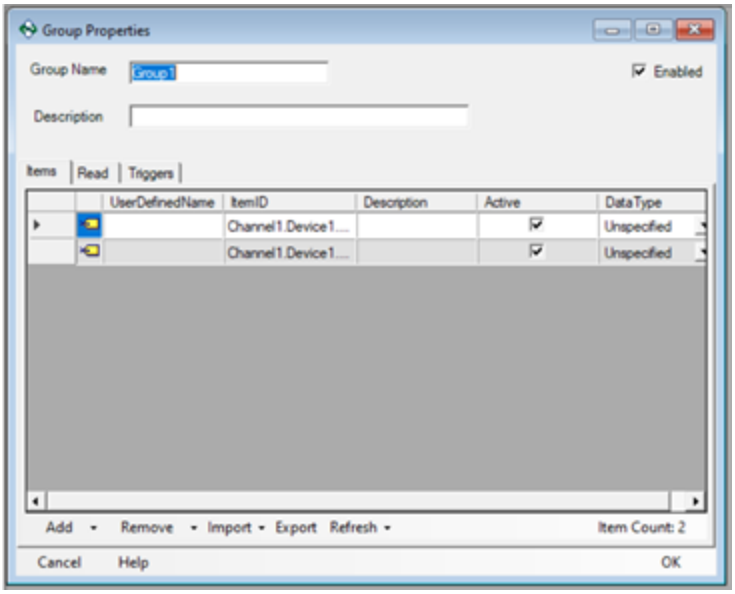
2. The new Group will be created with all the existing properties of the selected Group.



3.4 Test Logging

The Test Run feature allows the OPC Data Logger to test the current configuration without interrupting the current configuration in runtime. By default the test will run for 5 minutes.

To access this option configure an OPC Data Logger Project, then open the Runtime menu and choose Test Run. By default the test run must finish successfully before the runtime can be allowed to start. This setting ca be disabled in the options.

The Test Logging feature is best used when a current OPC Data Logger project is running and a new change needs to be tested without disrupting the OPC Data Logger runtime service.

The Test Logging feature does not interact with the OPC Data Logger service.

Please Note:

Scheduled Triggers will not work in test run.

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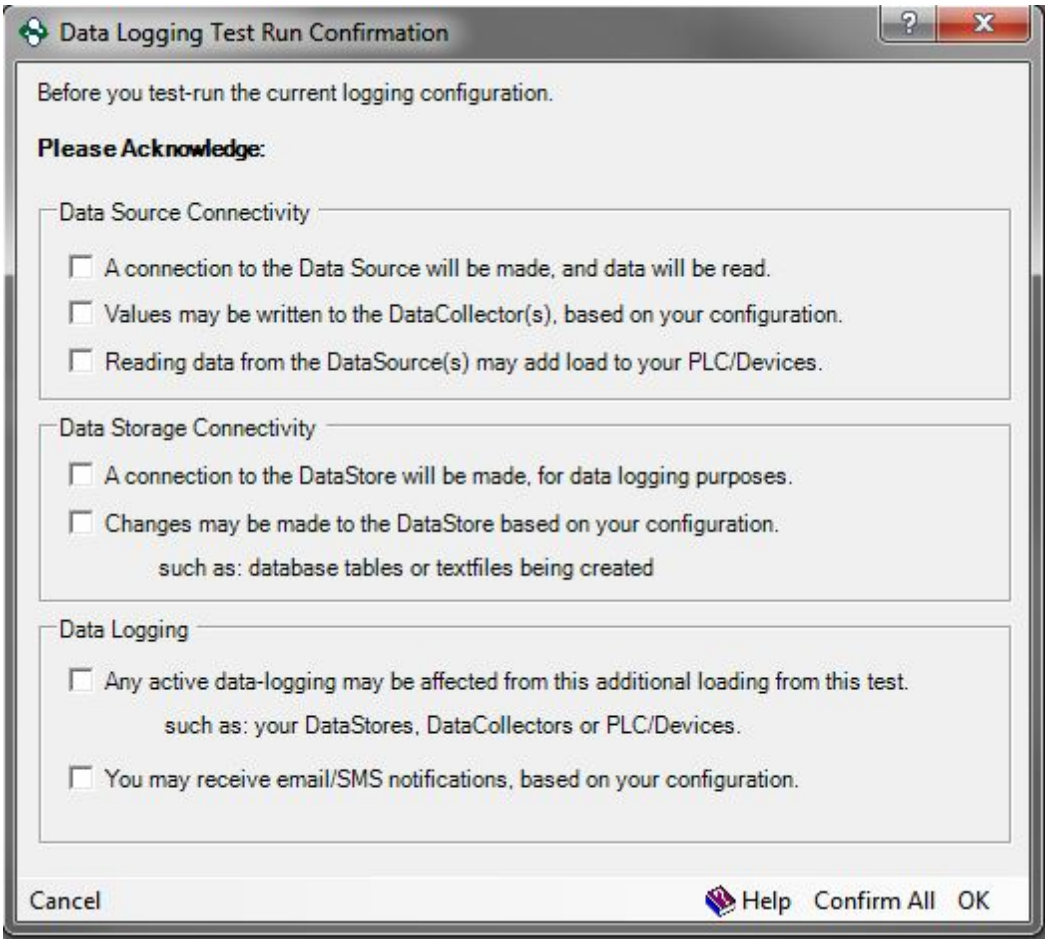
3.4.1 Test Run

Test Run Confirmation

When requesting a test run (For more information refer to the section on Test Logging) the following dialog will open:



This window displays a list of potential scenarios that may occur during the course of the test run. In order to proceed with the test run, each box must be checked. This can be done by either acknowleding each box individually or by clicking the "Confirm All" button in the bottomt right of the screen.

This window can be disabled via the Options window.

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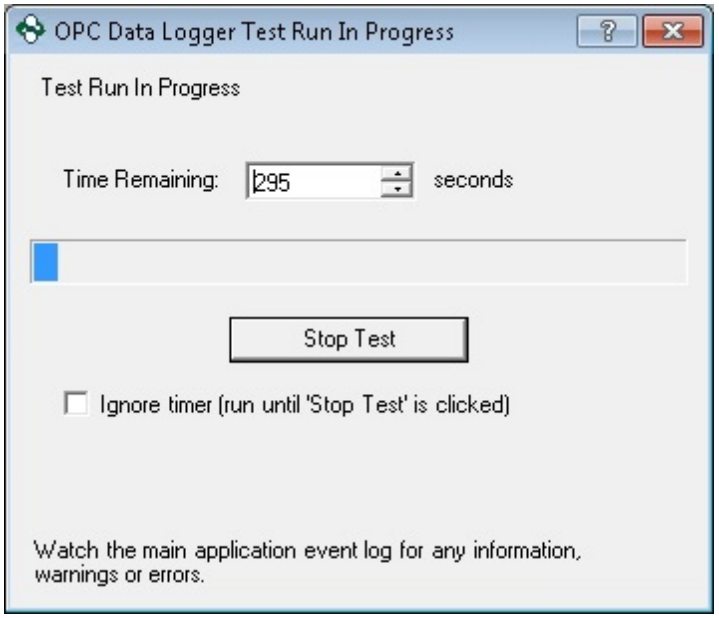
Test Run Progress Window

When performing a Test run, the following dialog will open:



This dialog shows a timer counting down from 300 to 0, while at the same time a progress-bar increments to visually show how much time has elapsed.

The default time in this box is 300 seconds (five minutes).

To increase or decrease the time remaining in the test run either click or hold the up and down arrows respectively. To enter a specific time limit, type in the desired time in the box; it will override the current time

To have the test run continue without the limitation of a timer, check the "Ignore Timer" button. The test run will continue until the "Stop Test" button is clicked.

To stop the test run manually, click the "Stop Test" button. This will stop the run regardless of whether the timer is being ignore or not.

3.5 Start & Stop Logging

There are 2 ways in which you can start and stop the Runtime:

1. Notify Icon
2. Service
3. OPC Data Logger Configuration

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It is recommended that the a user starts/stops runtime from the Notify Icon.

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Example Configurations

4 Example Configurations

For custom configuration questions please reach out to the Software Toolbox Support Team

Some example configurations in this section:

- Trigger Based Logging
- Log from 9AM to 5PM Daily
- Collect a Single Row of Data on Command
- Two Data Collectors to Single Storage Location
- Using Writebacks to Monitor a Database Connection
- Start and Stop Continuous Logging
- Switching Database Tables Automatically at Runtime
- Configuring a Writeback after Logging

4.1 Trigger Based Logging

This section covers the steps required to read from a group of tags using a triggered read. This can be useful for situations where logs must occur at a specific time such as a Boolean value going high, or a windows event firing. Situations such as a shift change greatly benefit from this configuration. This example will cover the use case of a Boolean value going high.

This example assumes you have created at least one of each of the necessary components to log data. These components include; Data Collector, Data Storage, Data Presentation and a Logging Task with at least one Group of items.

1. Right click on your logging task and select properties.

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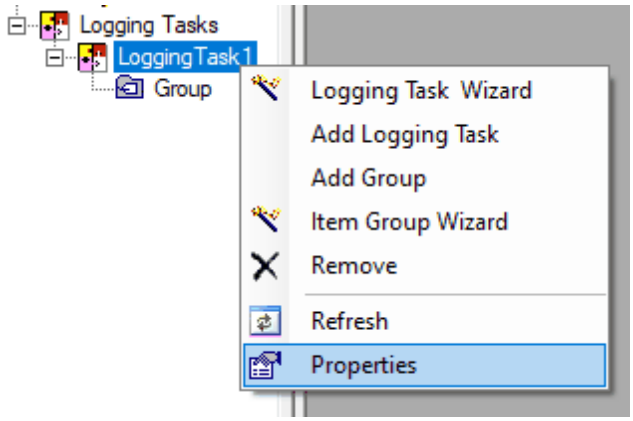

2. In the Groups tab of the logging task properties right click the group and select properties.

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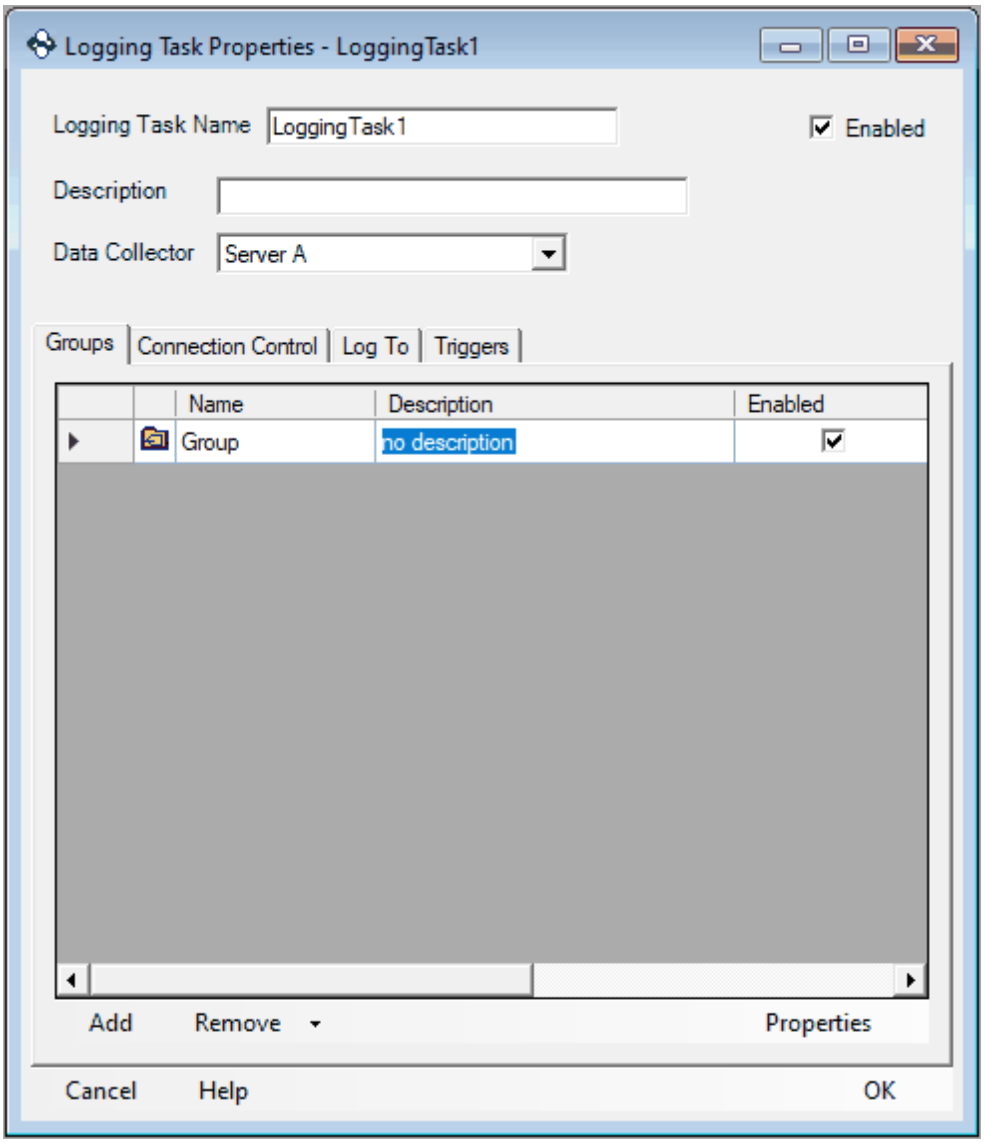

3. Go to the Read tab of the Group Properties and change the read method to Triggered Reads. Now that we have specified we want to do triggered reads, we must set up a trigger that will be used. Keep this screen open we will come back to it for step 10.

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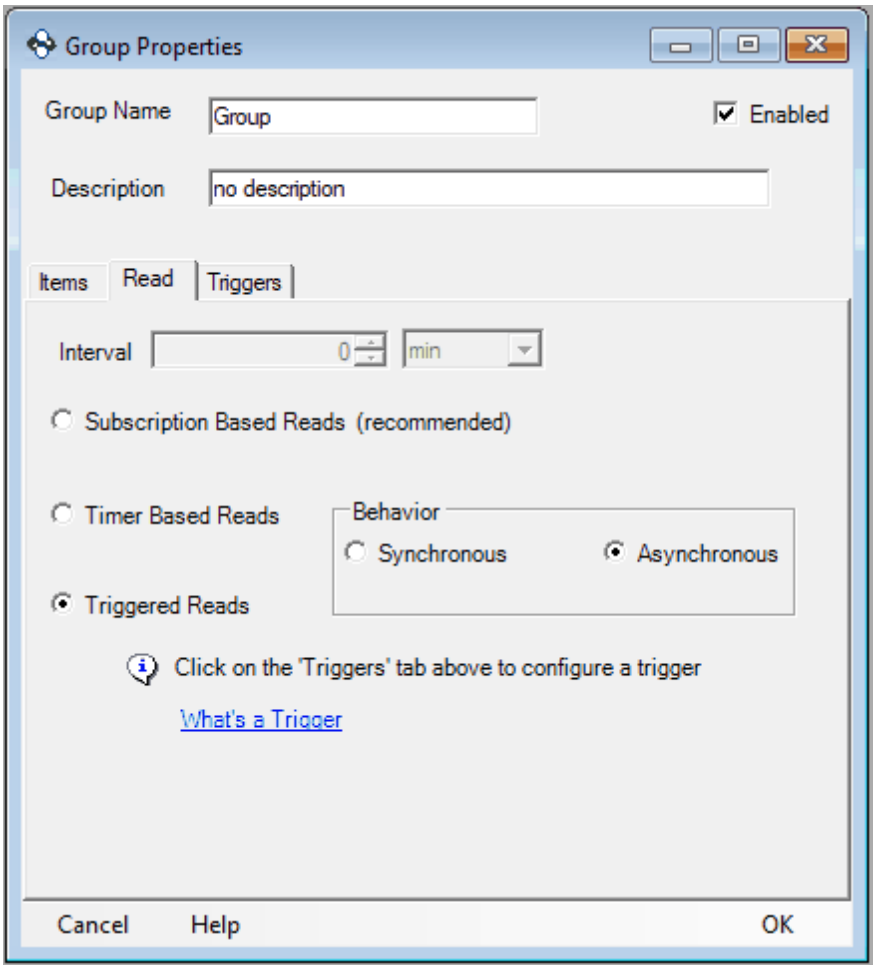
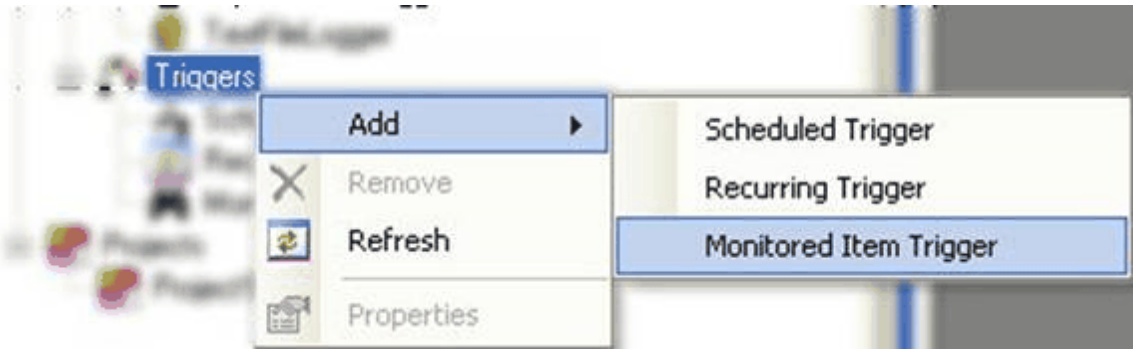


4. For this example we are going to be using a Monitored Item Trigger. To add a monitored item trigger right click on the Triggers icon in the tree view and select Add -> Monitored Item Trigger.



5. A monitored item trigger should have appeared in the tree view. Right click on MonitoredTrigger1 and select properties.

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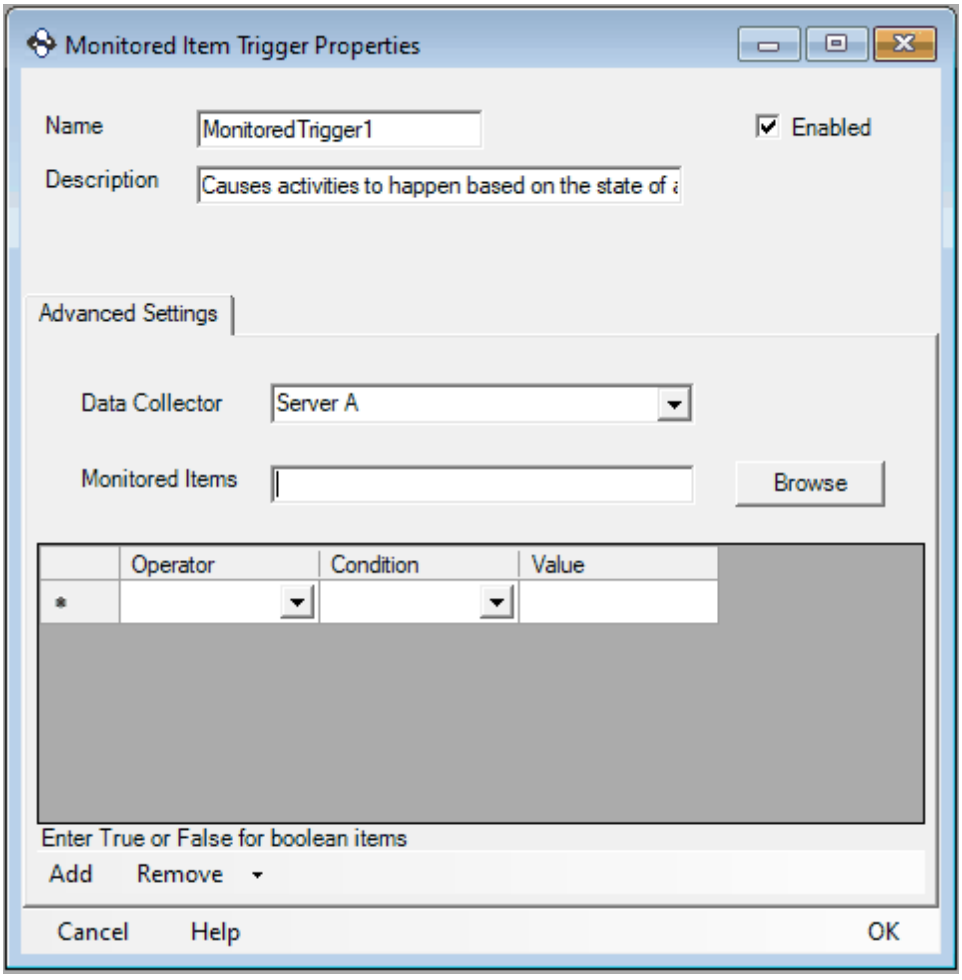
6. Be sure to choose the Data Collector where the item you would like to monitor is located. Then click Browse.



7. You should now be able to browse all the items from the selected Data Collector. Browse to the item you would like to monitor and select Ok. For this example we are going to monitor a Boolean value.

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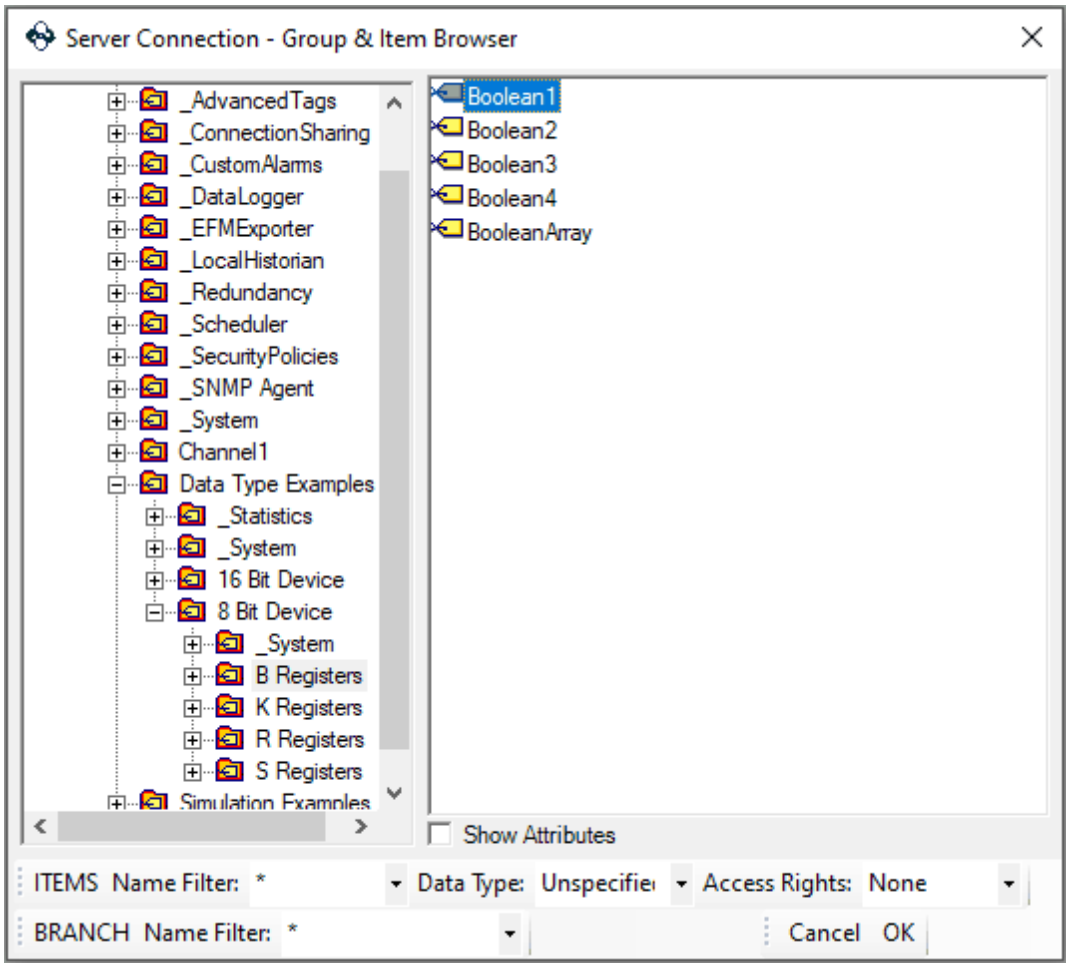

8. For this example, logging will occur when the tag Bool_1 equals true.

NOTE: When monitoring Boolean values you must use the string representations of the value you want to monitor.

- Use True instead of 1.
- Use False instead of 0.

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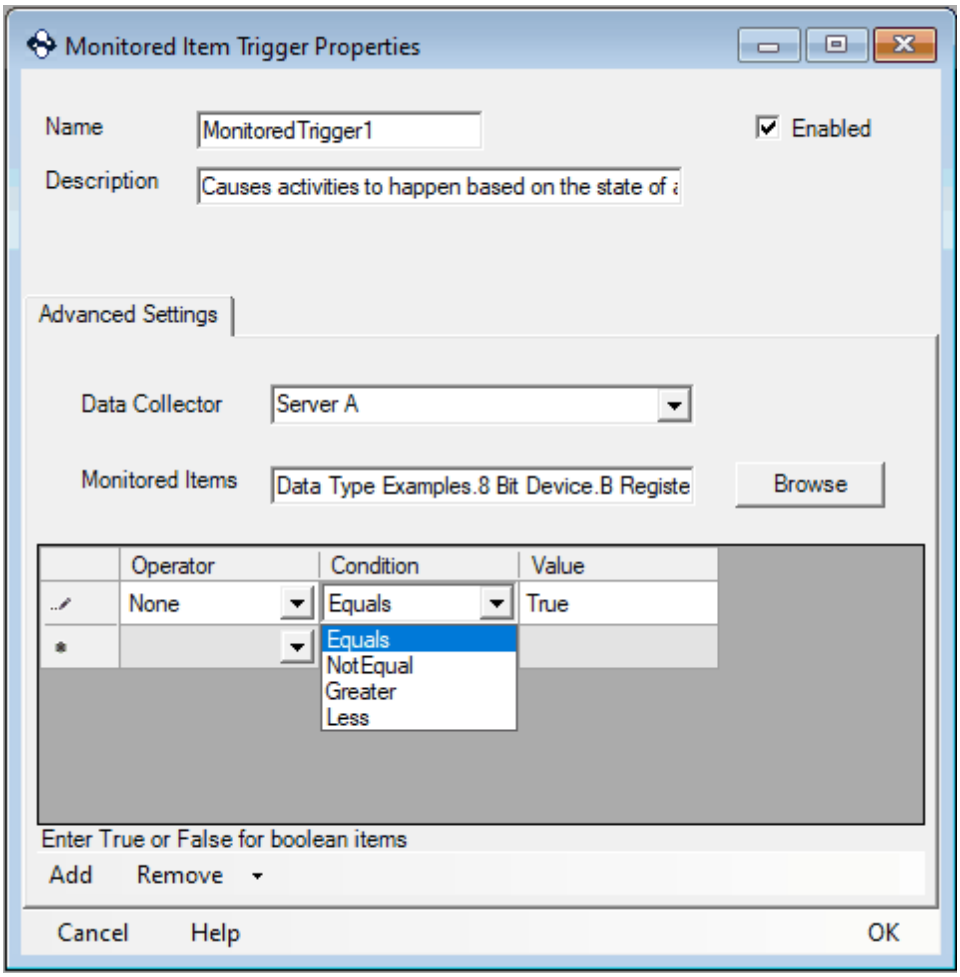
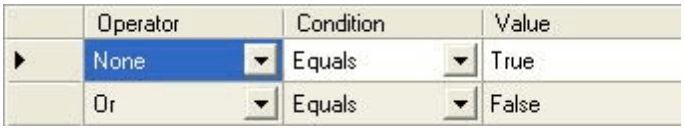


The trigger item can also be monitored such that logging occurs each time the value changes to true and again when the value changes to false. To do so, your configuration would look the same as the figure below.



9. Once you have configured the conditions of the item you are monitoring click Ok.

10. Return to the Group Properties window still open from step 3. Click the Triggers tab. Click the Add button at the bottom and select the trigger you just created.

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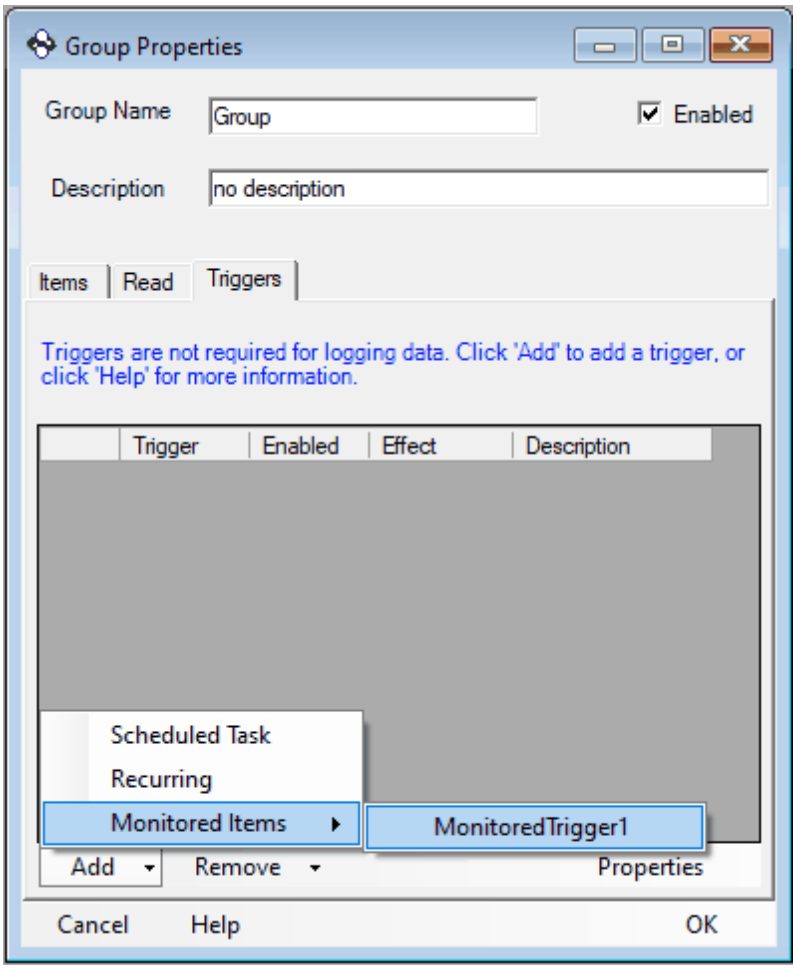

11. Now you must set the Effect the trigger will have. We want to set the effect to One-shot Read Now. Also, make sure the Enabled box is checked. You can now click Ok for the Group Properties window and then select Ok on the logging task Properties window.

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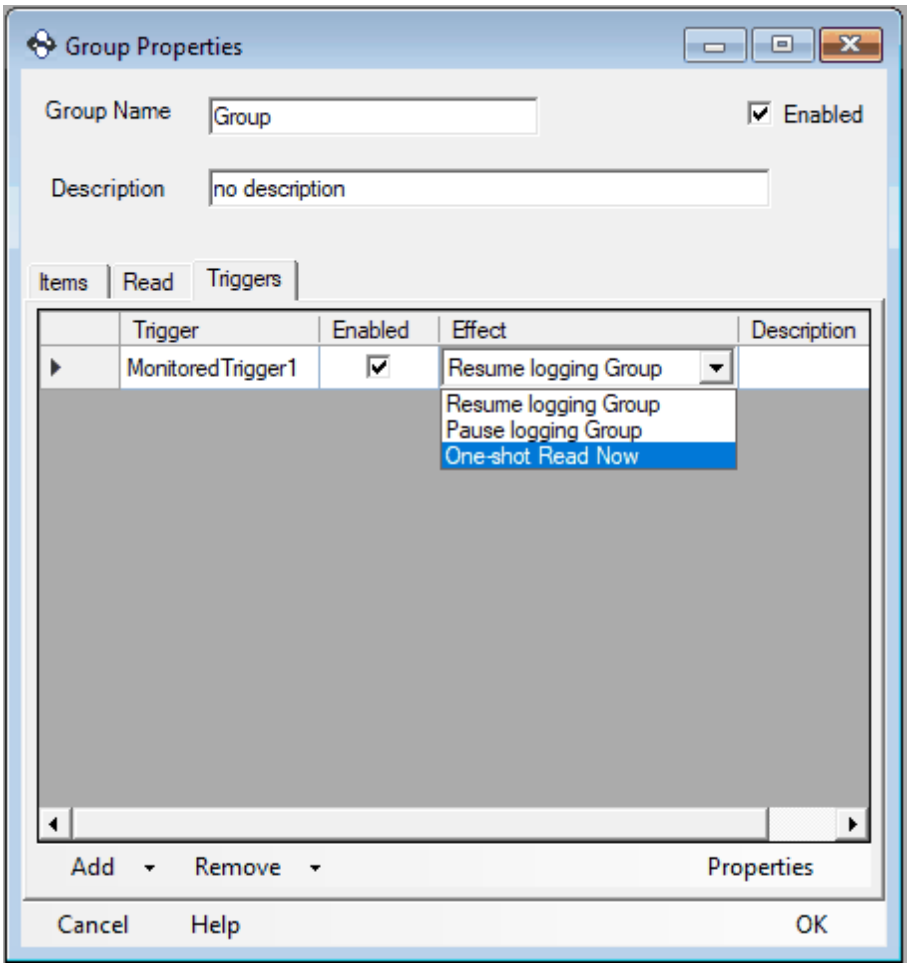

4.2 Log From 9 AM to 5 PM Daily

We will show you how to take an existing logging task configuration and make it log from 9am to 5pm daily.

This example will start logging data at 9am and stop logging data 5pm and repeat this action daily.

This example assumes the following:

- You have at least one Data Collector.
- You have at least one Data Presentation.
- You have at least one Data Storage Component.
- You have at least one Group of items.
- You have at least one logging task.
- If you were to do a Test Run data would be successfully logged.

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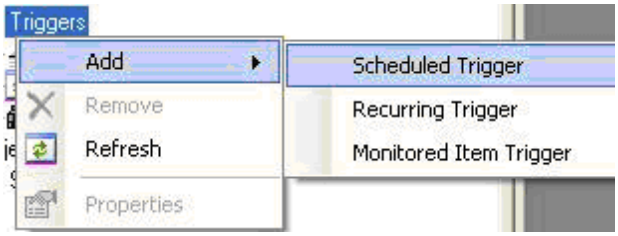
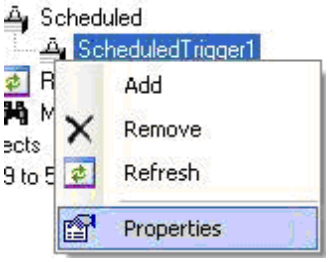
1. Right click on the triggers icon in the tree view and select Add -> Scheduled Trigger. This will add a Scheduled Trigger called ScheduledTrigger1.



2. Right click the ScheduledTrigger1 icon in the tree view and select Properties. This will open the property page for the trigger.



3. Give your trigger a useful name (specify the name as "9am start trigger") and then a useful description.

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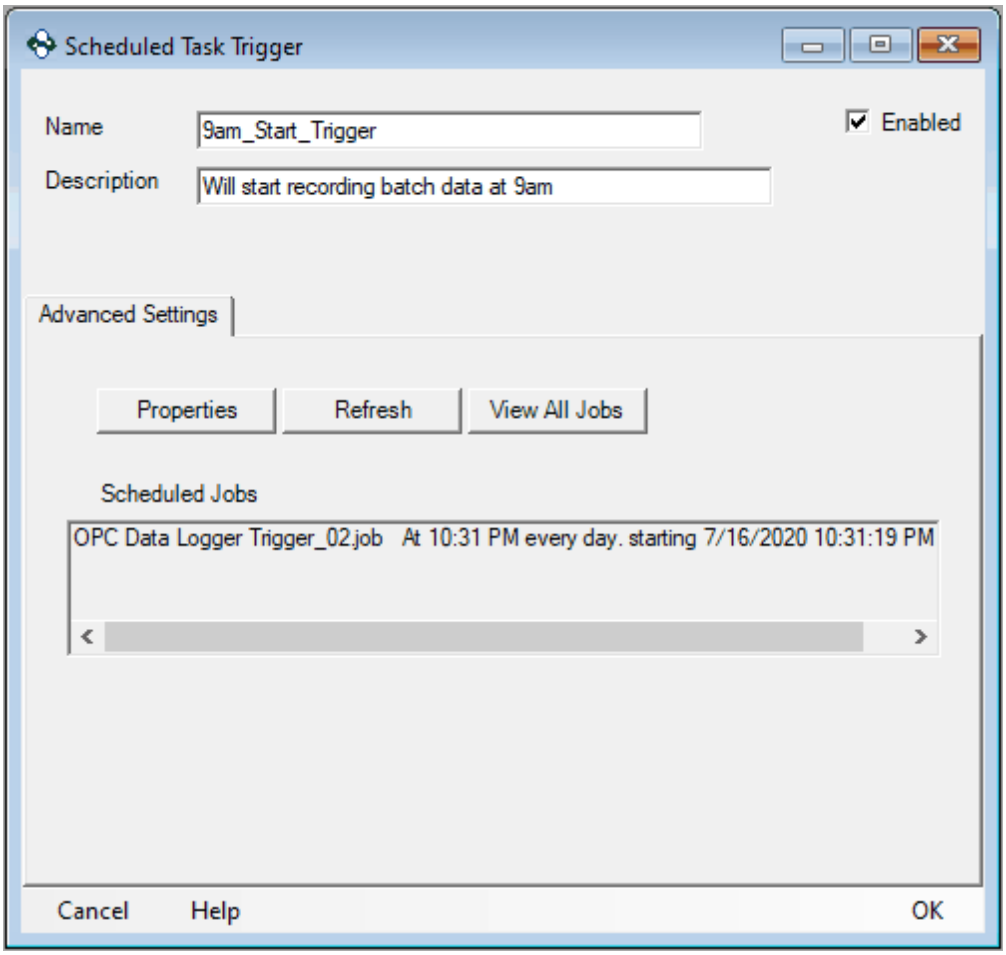

4. Highlight the scheduled job and click the Properties button and then configure the schedule settings:

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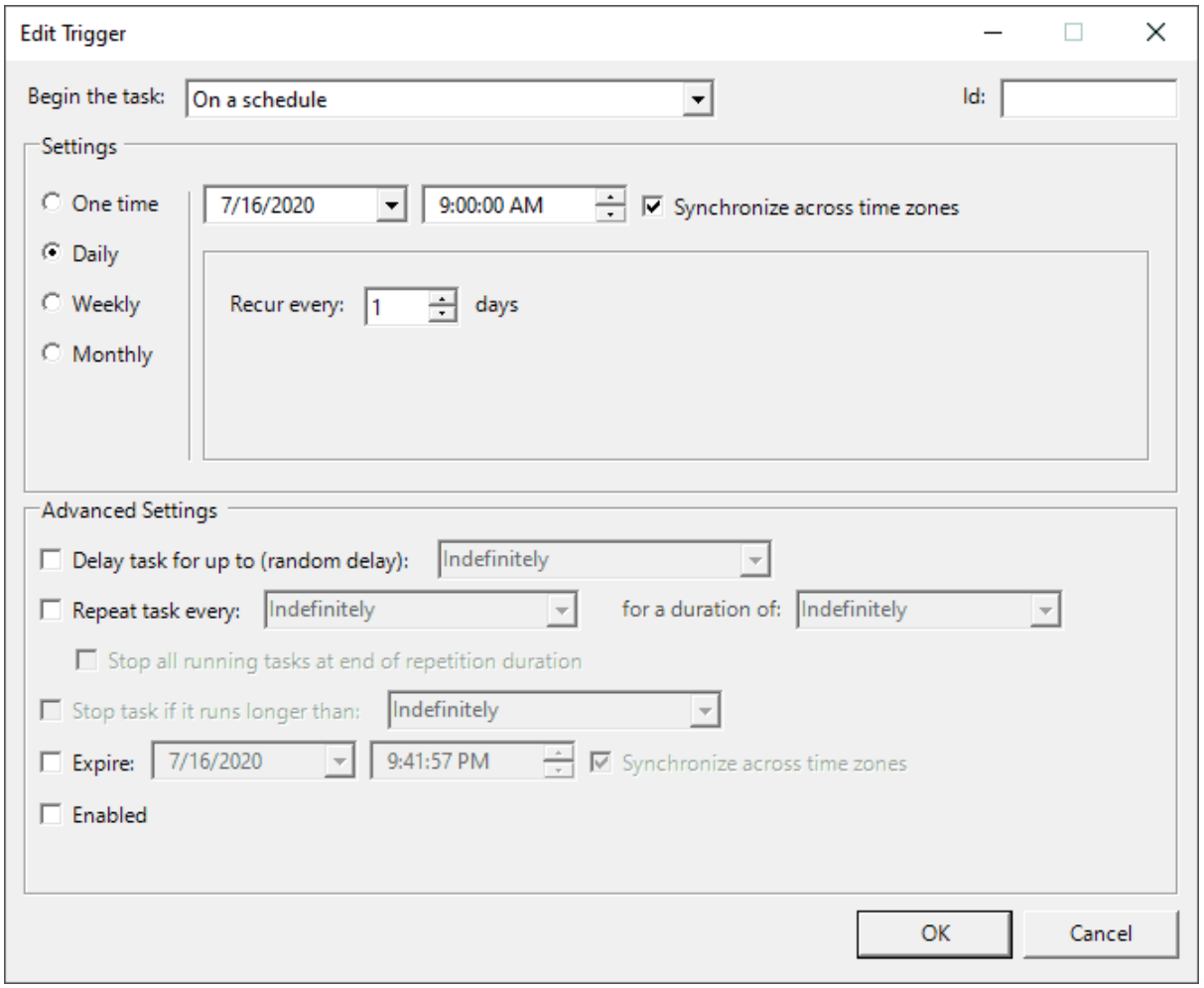
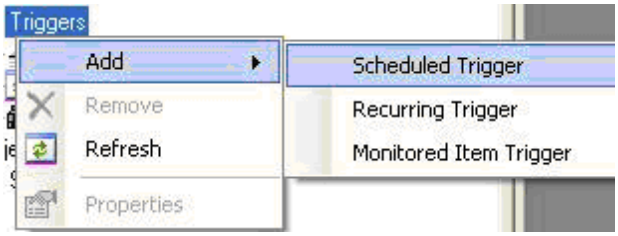


5. Right click on the triggers icon in the tree view and select Add -> Scheduled Trigger. This will add a Scheduled Trigger called ScheduledTrigger2.



6. Right click the ScheduledTrigger2 icon in the tree view and select Properties. This will open the property page for the trigger.

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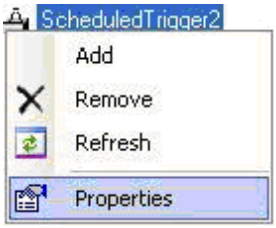
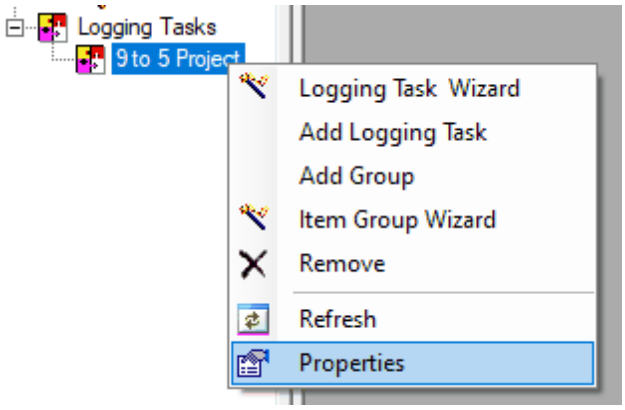


7. Repeat the same procedure as with the previous scheduled event, and this time set it to occur at 5pm. Name the trigger: 5pm stop trigger.

Now we must add the triggers to the Logging Task, give them an effect and enable them.

8. Right click your logging task in the tree view and select Properties. This will display the properties of the Logging Task.



9. Click the Triggers tab. Then add both of these triggers to the Logging Task. This can be done by clicking Add -> Scheduled and selecting the name of each trigger. Once you have added both triggers ensure they are enabled.

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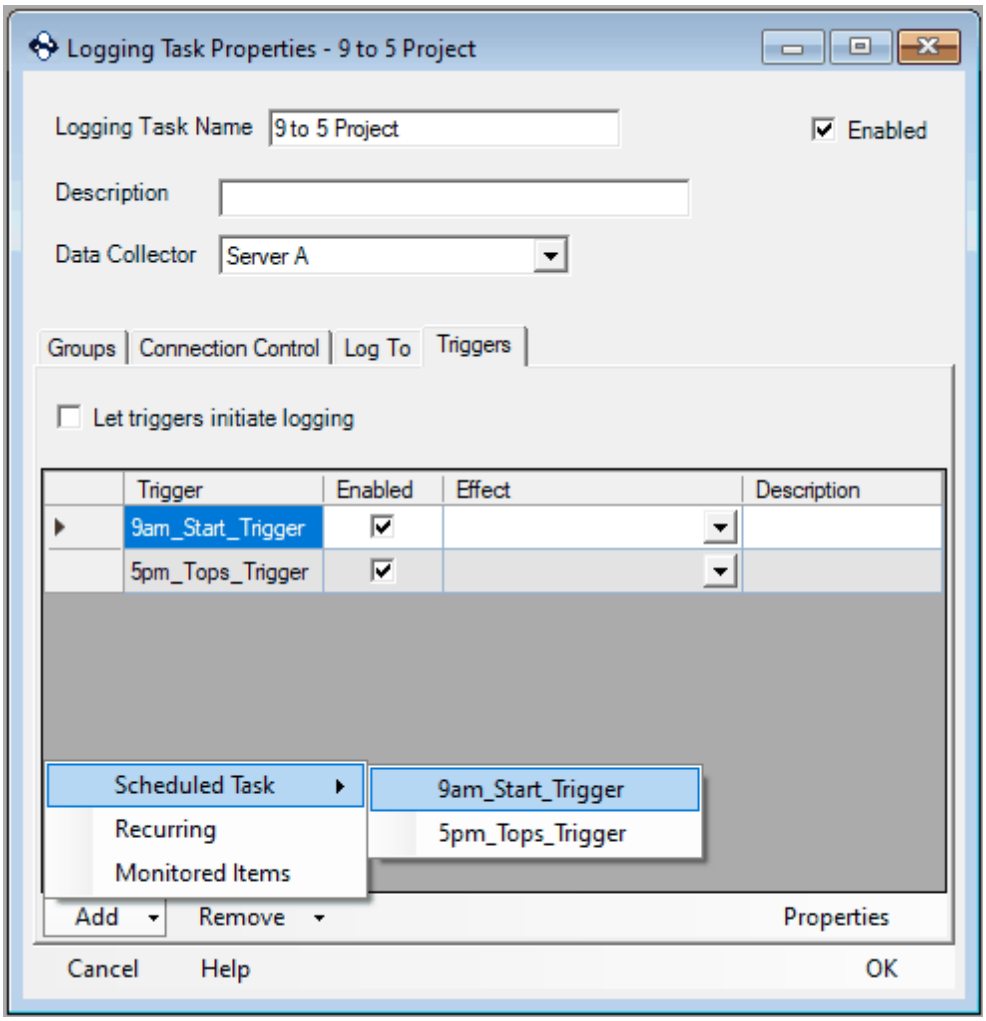

10. Now we must give each trigger an Effect. For the 9am Start Trigger choose the effect Start Logging Data. For the 5pm Stop Trigger choose the effect Stop Logging Data. Once configured you can click OK.

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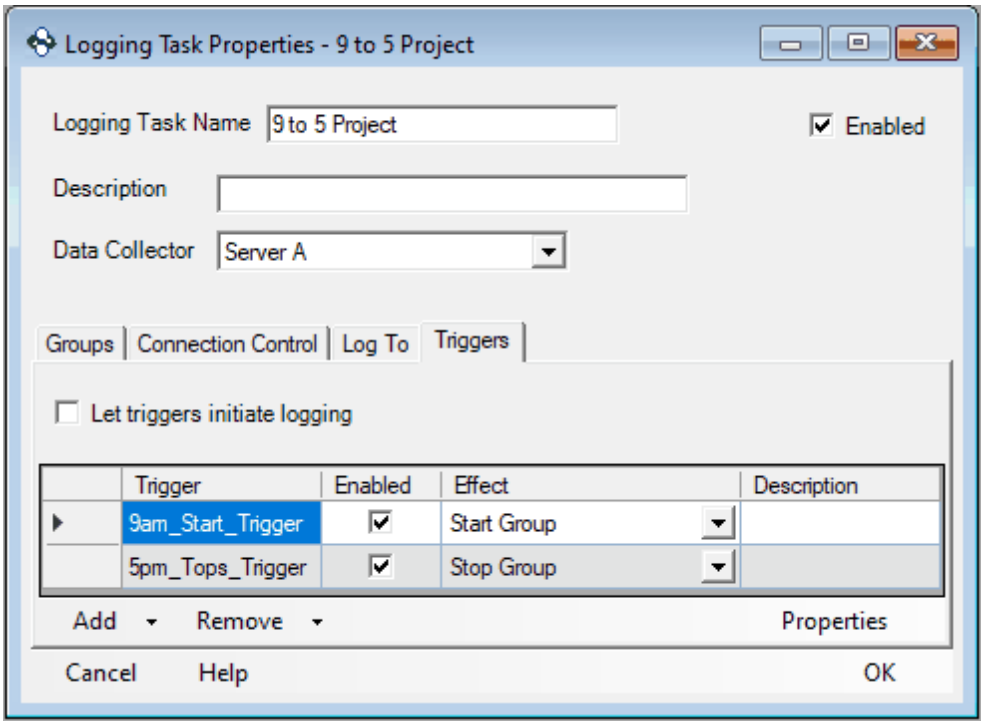

11. You must then go to the main menu and select Logging -> Start Runtime. Runtime must be started for these triggers to be noticed.

4.3 Using Writebacks to Monitor a Database Connection

This section will describe how to set up a Writeback to monitor a Database Connection.

This example assumes that a Fully Functioning Data Logger Project is already created. This includes but is not limited to:

- Data Collector
- Presentation Mode
- Data Storage Logger
- Logging Tasks with a Group
- OPC Item to Receive The Write Value

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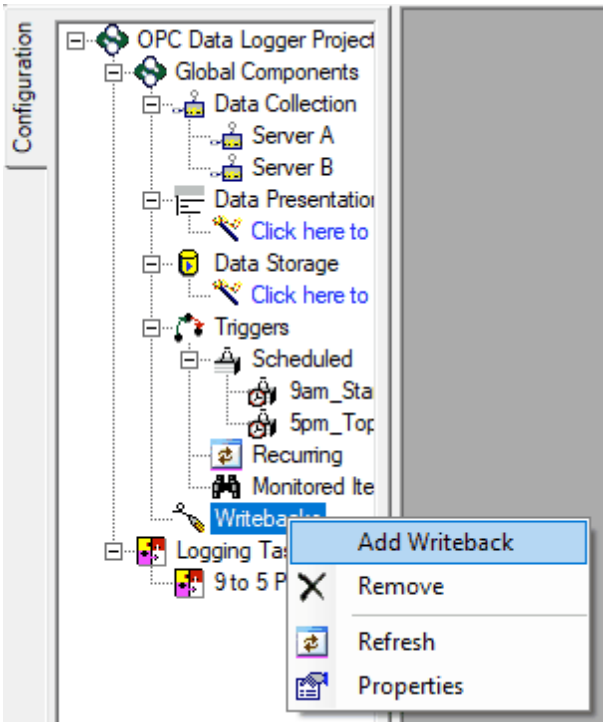
NOTE: For this example configuration I am using a VPC with SQL Server and TOP Server as my OPC Server.

1. Right-click on the Writeback in the Tree-View and Add Writeback.



2. Assign the Writeback a User Friendly Name, type an Optional Description and assign your Data Collector.

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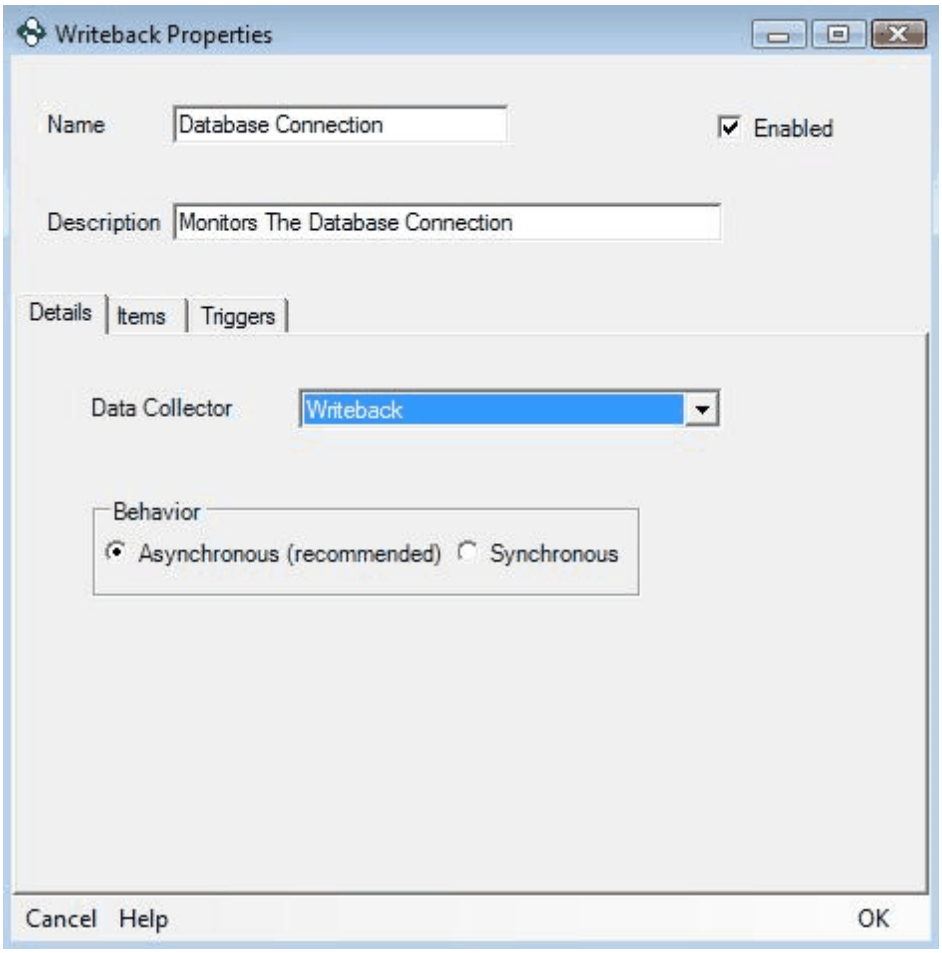

3. Be sure that within your OPC Server you have a OPC Item to receive your Writeback.

Tag Name	Address	Data Type	Scan Rate	Scaling
Database Connection	R0004.00	Boolean	100	None
Tag_1	R0001	Short	100	None
Tag_2	R0002	Short	100	None
Tag_3	R0003	Short	100	None

4. In the Items Tab of the Writeback Properties press the Add Button and Browse for Items to Add.

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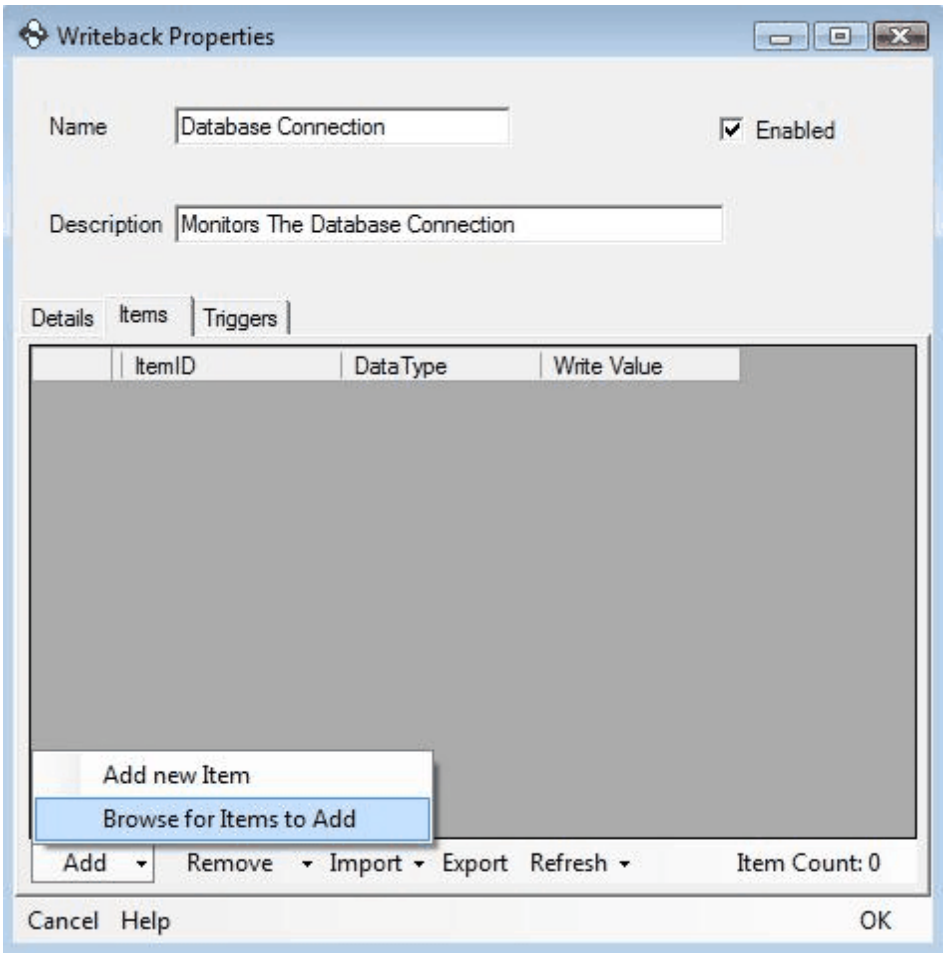

5. Find the OPC Item that you wish to send the writeback value to and press the Ok Button.

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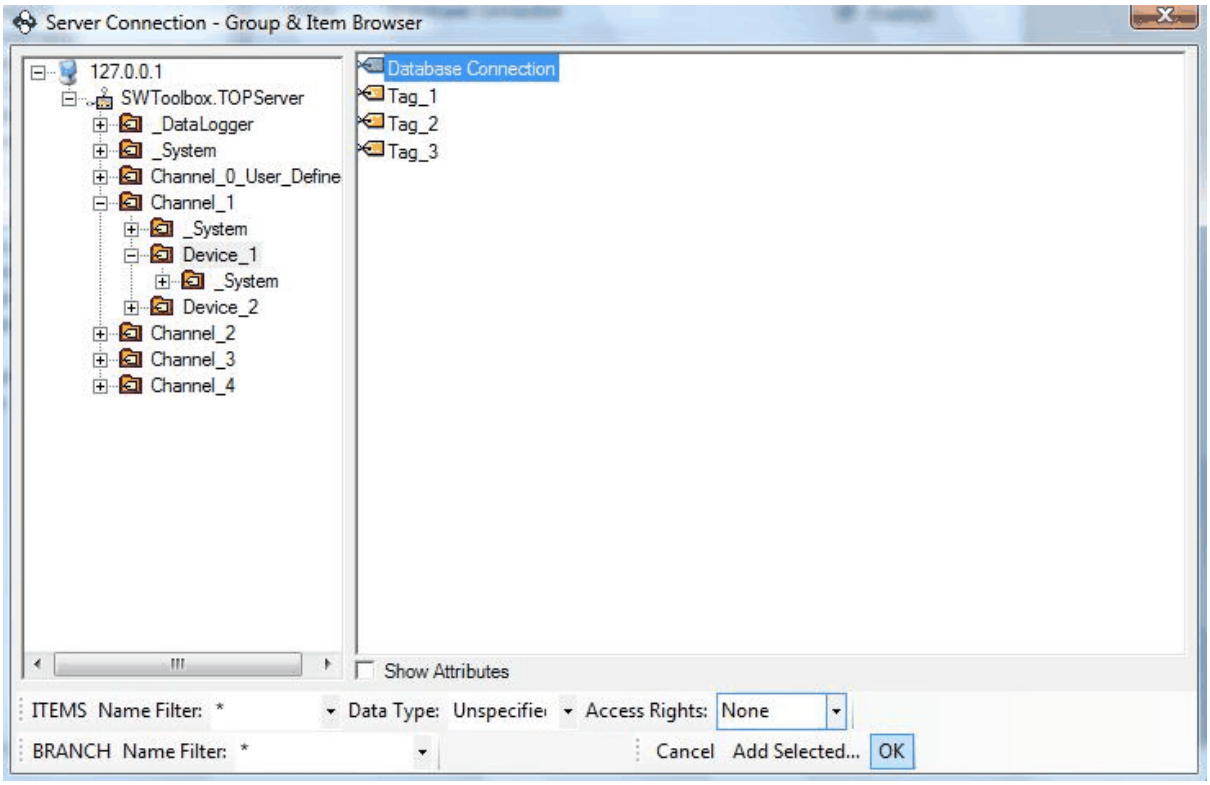

6. Assign the Writeback Value of False. This will send the value of False when the connection is broken.

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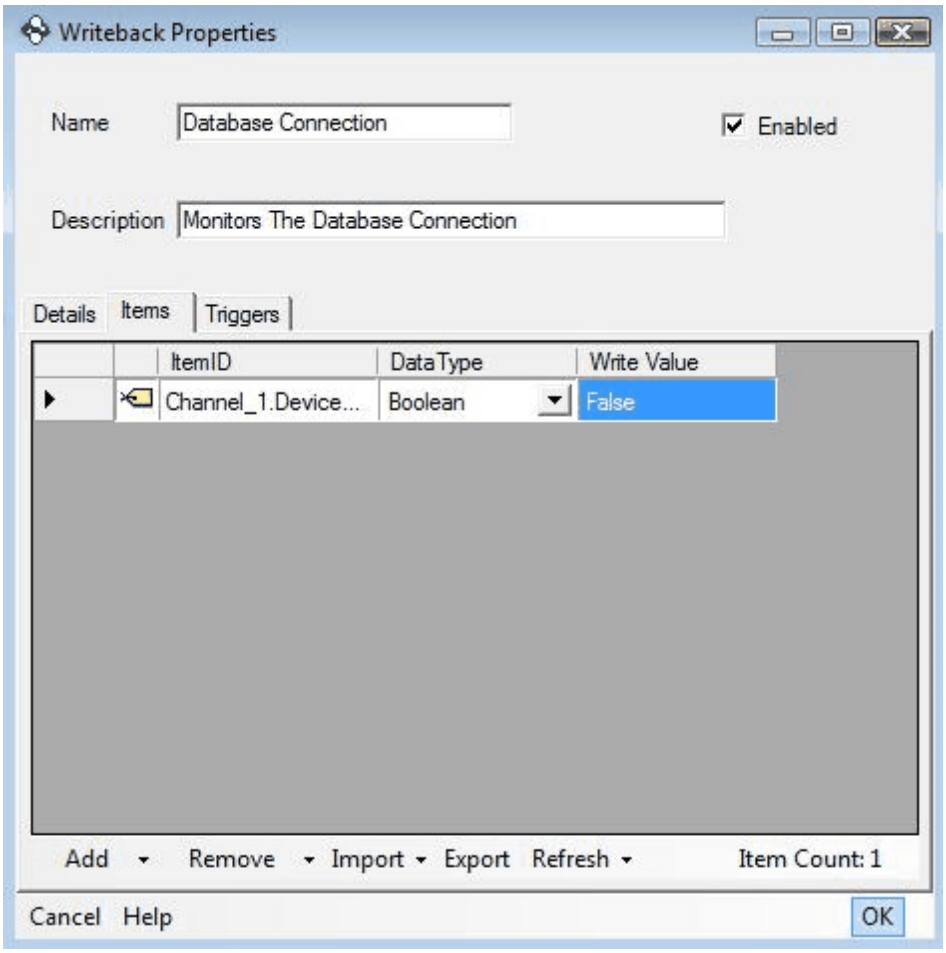

7. Go to Database Properties from the Tree-View and click on the Writebacks Tab.

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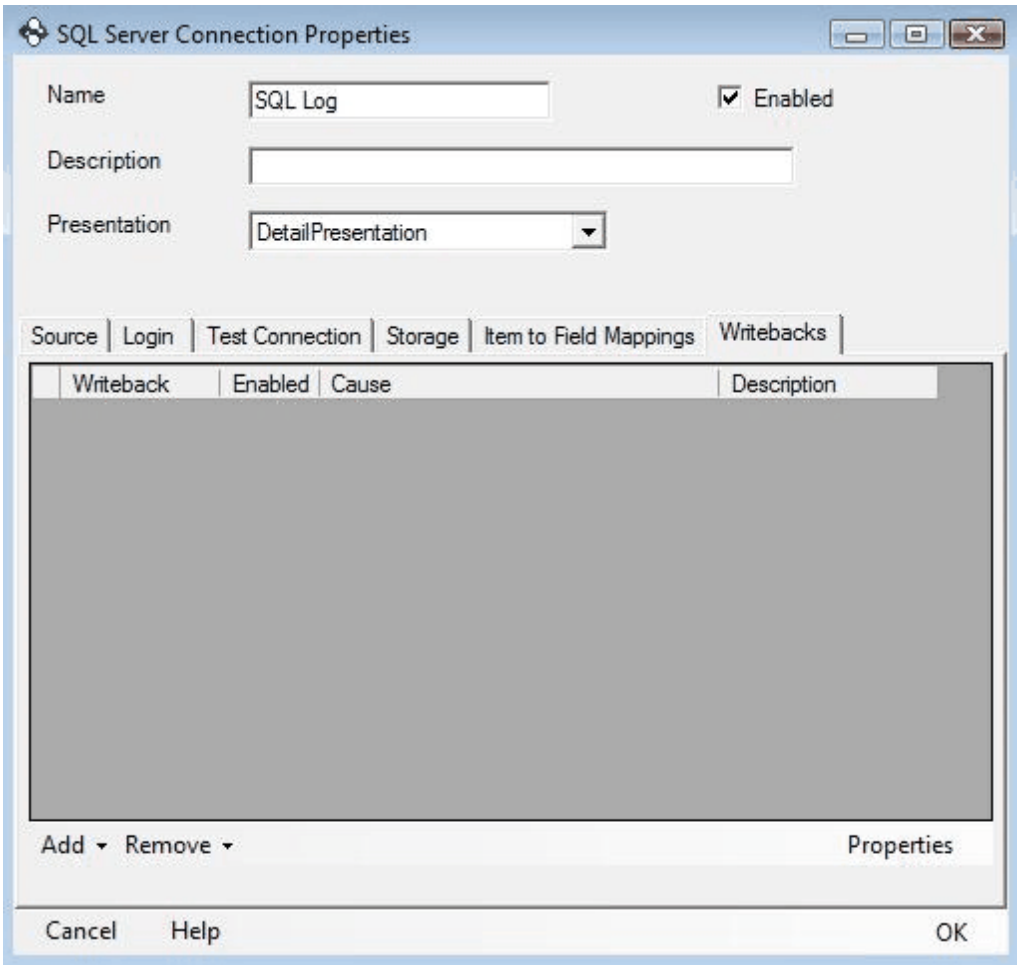

8. Press the Add Button and click on the Writeback you made for the Database Connection.

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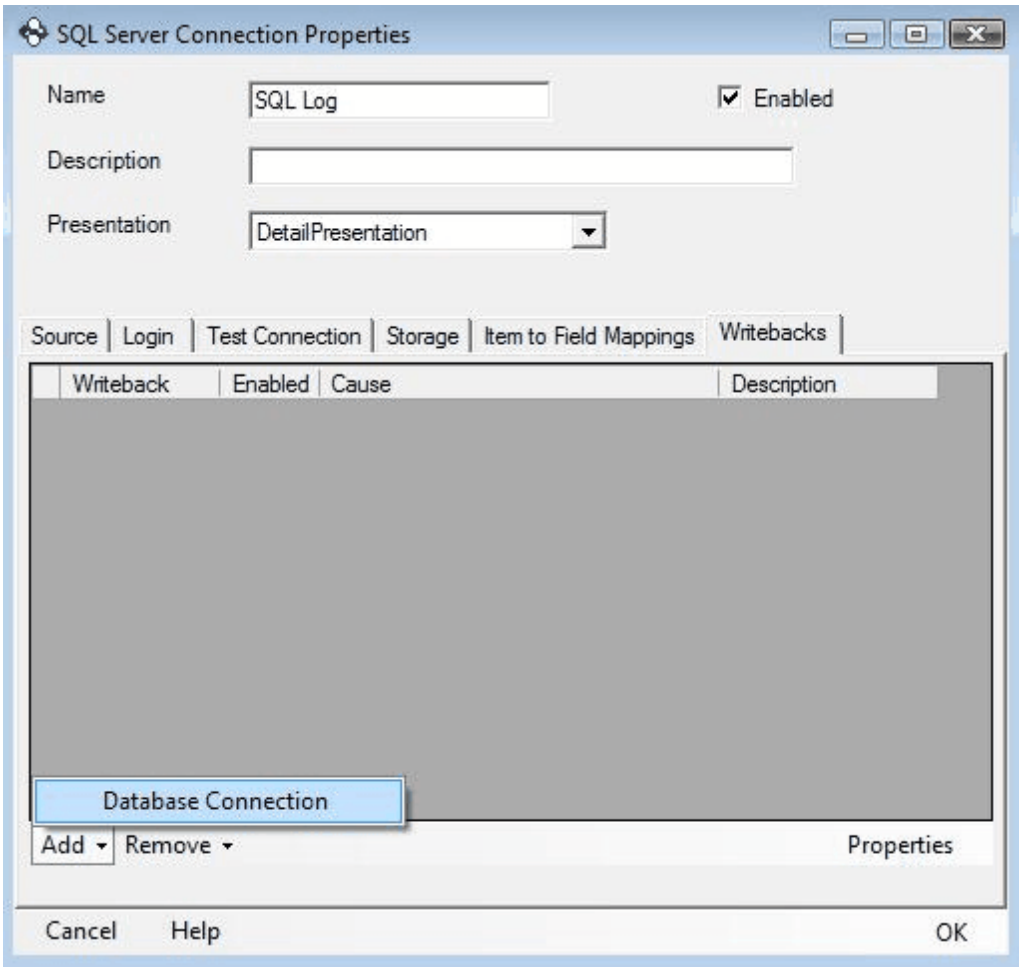

9. Set the Cause of the Writeback to "Send when database connection is closed or lost". This will trigger the Writeback to happen every time your Database Connection is broken.

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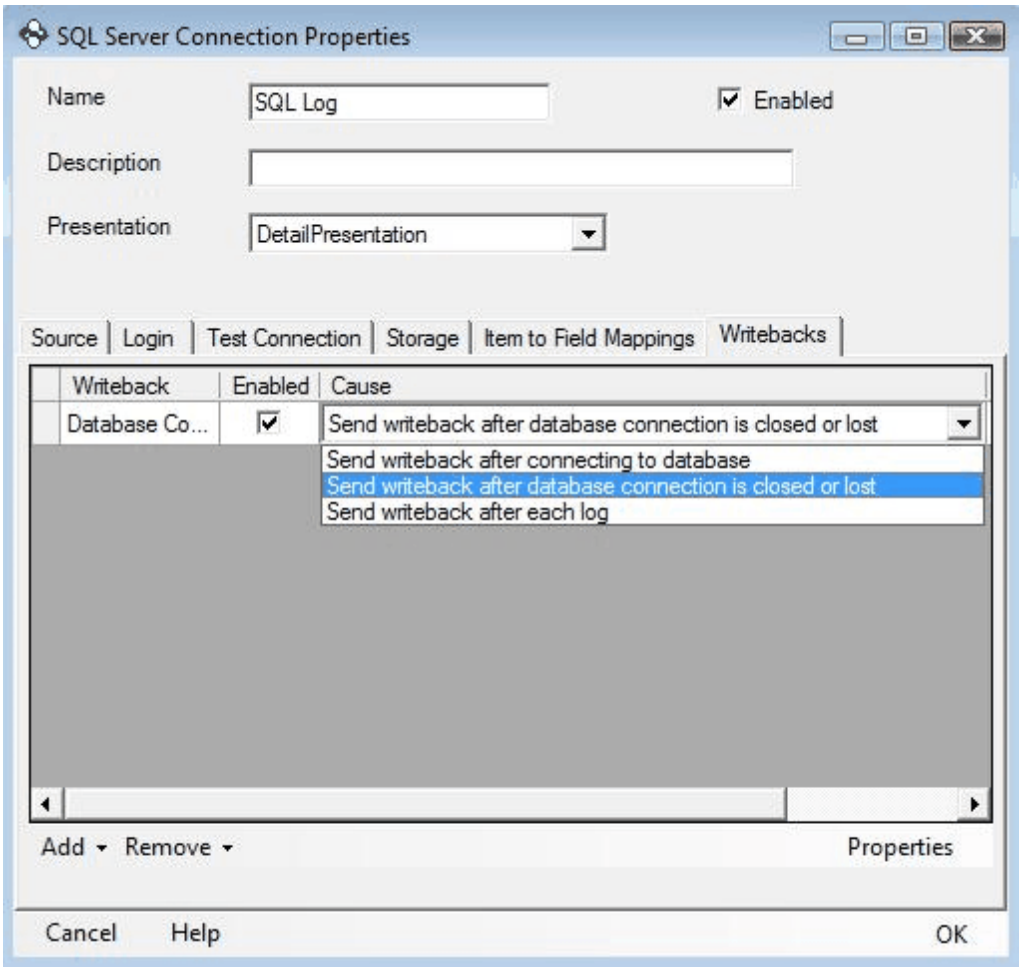

10. Type an Optional Description and press the Ok Button to enable the Writeback.

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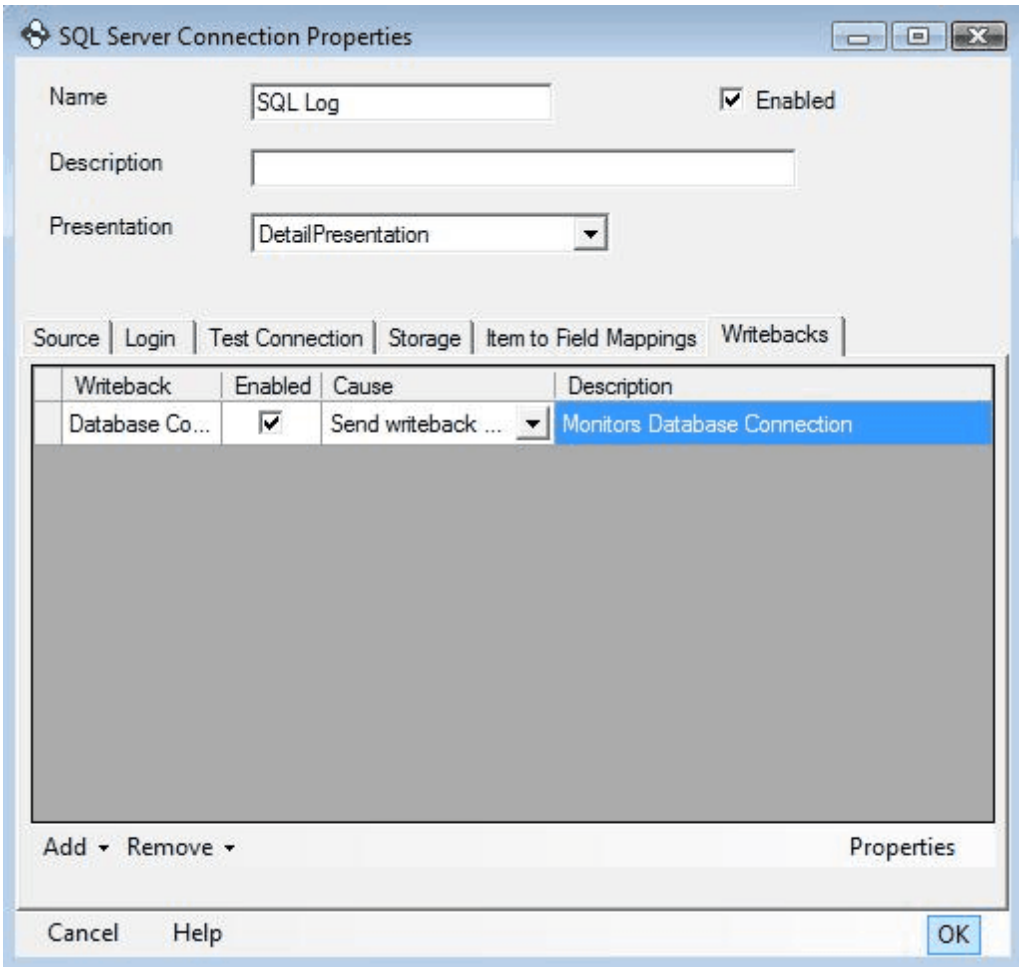

11. NOTE: To change the OPC's Item value back to True when a connection is established, simply create another Writeback sending to the same OPC Item and in the Database Connection Properties change the new Writebacks Cause to "Send after connecting to the database".

4.4 Start and Stop Continuous Logging

Video Guide: Starting and Stopping Continuous Logging with Triggers

4.5 Switching Database Tables Automatically at Runtime

This example describes how to configure the OPC Data Logger to automatically switch which database table data is logged to at runtime. This scenario can be particularly useful if data is logged to tables based on part number, lot, batch, or any other value in the data source, and

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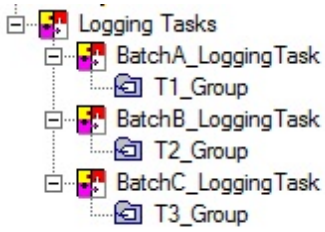
the OPC Data Logger should automatically switch between database tables.

This example assumes the following:

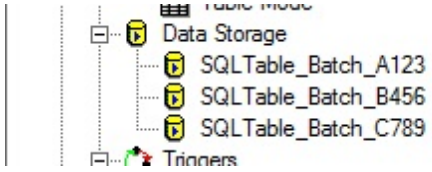
- At least a single Data Collector component has been configured
- At least a single Data Presentation component has been configured

Configuring the OPC Data Logger

1. A Logging Task is created for each batch/lot/part number – each logging task must have at least one Item Group to be logged. All Groups configured for a single Logging task will be logged to the same database table. The number of Logging Tasks should match the number of tables that will be logged to.



2. A Data Storage is created for each table that data will be logged to, and the connection to the database is verified.



3. A trigger must be configured to signal when to start logging to each table. This example uses Monitored Item Triggers, but Scheduled or Recurring triggers can be used to switch tables based on time, date, or system events. Each Monitored Item trigger will

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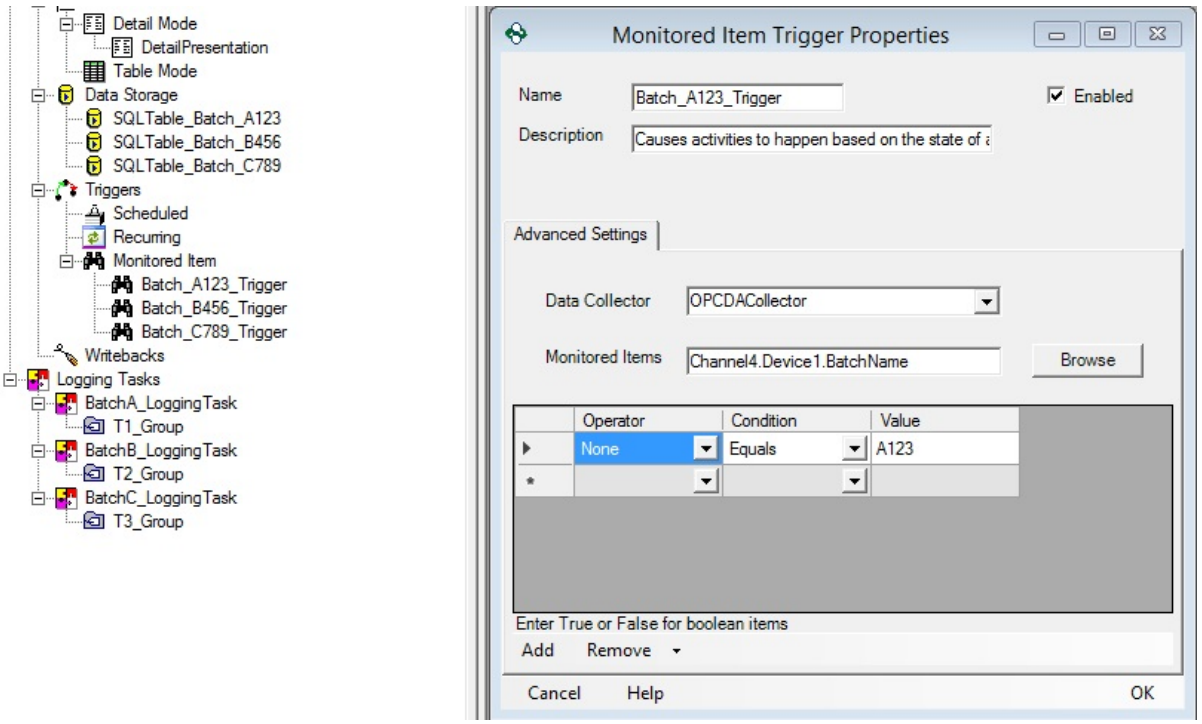
fire when the monitored tag value matches the corresponding batch name.



4. Open the Logging Task properties, and navigate to the *Triggers* Tab. Each Monitored Item trigger must be added to each Logging Task. The effect for all Monitored Item triggers will be set to *Stop Group* with the exception of the trigger that signals that this Batch is being run – this trigger should be set to *Start Group*.

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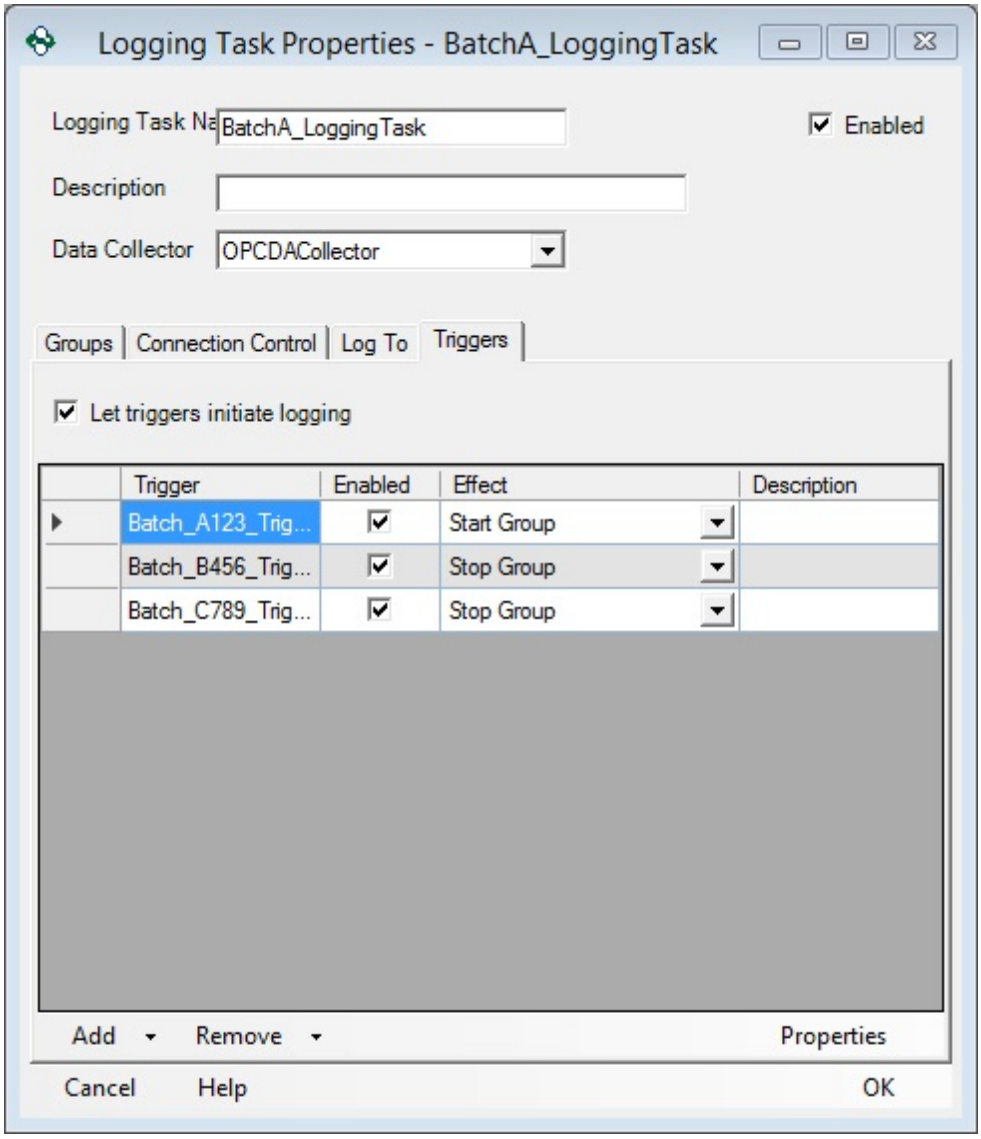

When this configuration is copied to each logging task – with only the appropriate trigger setting the group active – the Group will only be logged when the Monitored Tag value equals the batch name. As long as each Logging Task is associated with the correct table, data will only be logged when the Batch name matches the data set intended for that table.

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4.6 Configuring a Writeback after Logging

This example describes how to configure the OPC Data Logger to send a writeback to the data source after the data has been successfully logged to the database. This scenario is particularly useful in scenarios where the PLC/Device lets the OPC Data Logger know that data is ready to be logged by raising a bit in the PLC, and expecting the OPC Data Logger to confirm having received this data before new data is made available.

This example assumes the following:

- At least a single Data Collector component has been configured
- At least a single Data Presentation component has been configured
- At least a single Data Storage component has been configured
- At least a single Logging Task and Item Group have been configured

Configuring the OPC Data Logger

1. A Monitored Item Trigger is created that monitors the "DataReady" item in the OPC Data Source. This item is expected to indicate when data is ready to be logged. In this example the Monitored Trigger will raise when the DataReady item is high (1)

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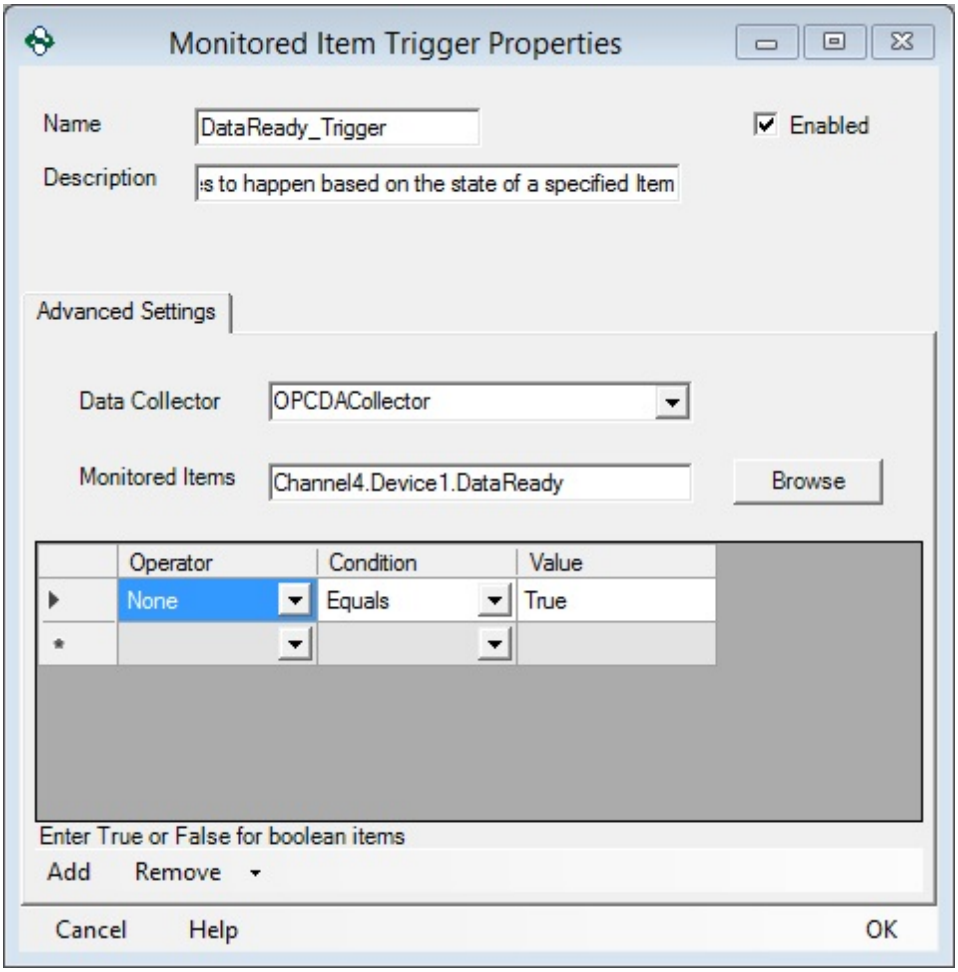

2. A Writeback is created to write a value of False (0) to the "DataReady" tag. The write back item does not have to be the same item that is being monitored by the Monitored Item trigger.

   Note: Do not add the Monitored Item Trigger to the Triggers tab of the Writeback itself – this will send the writeback as soon as the trigger is raised, not when the data is logged.

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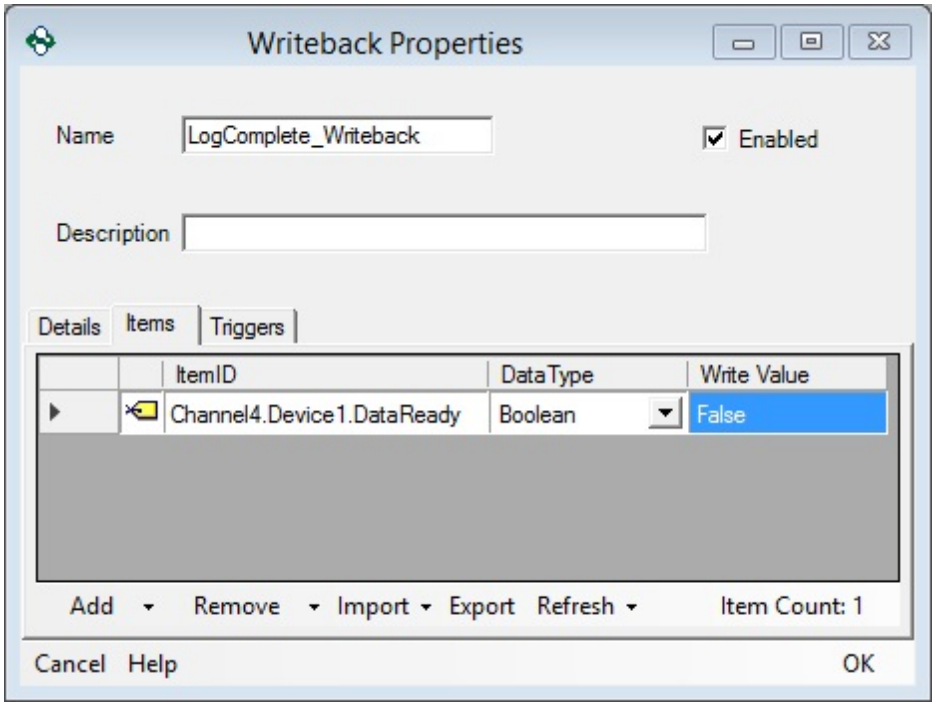

3. The Item Group is configured to only read data when the "DataReady" trigger fires, by switching the read method to Triggered Reads. The Read behavior was set to Asynchronous, which is the recommended setting.

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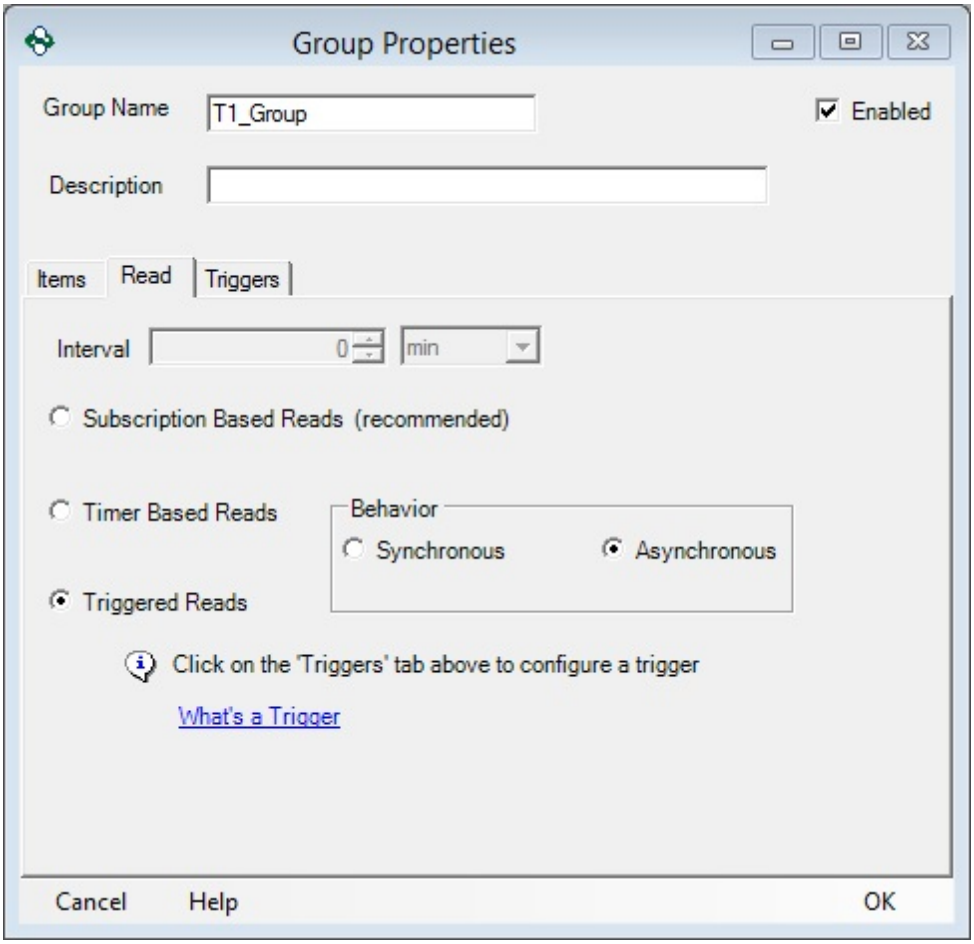

4. On the Triggers tab of the Group properties, the DataRead_Trigger was added, and the Effect is set to "One-shot read now". This will result in the OPC Data Logger performing a single read of all values, every time the Monitored Item Trigger is raised.

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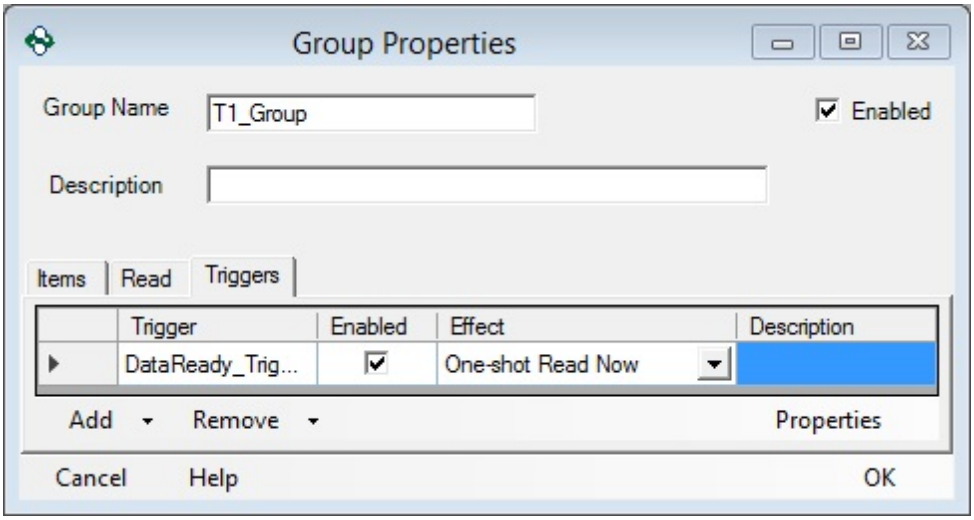

At this point in the configuration, the OPC Data Logger is set up to read the configured items, only when the OPC Data Source indicates they are ready to be read – i.e. only when the Device indicates there is new data available.

5. Open the Data Storage properties – this example uses a SQL Server Database, but this can be configured for all Data Storage components – and navigate to the Writebacks tab. The LogComplete_Writeback writeback was added to the list, and the Effect is set to "Send writeback after each log".

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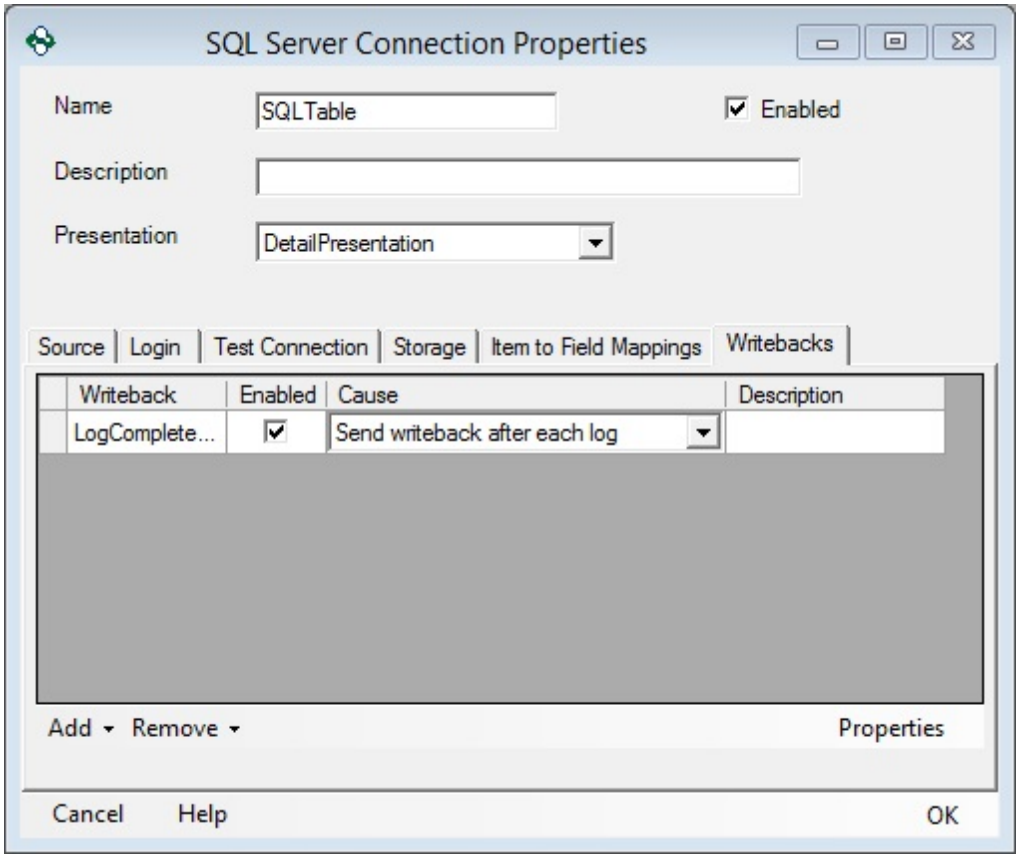

With this configuration, the OPC Data Logger will monitor the item that is configured in the Monitored Item Trigger, and as soon as the Trigger condition is met – and the OPC Data Logger will read all items in the Group. As soon as these items are successfully written to the Data Storage – the OPC Data Logger will write back to the device that the data has been successfully logged.

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Recommendations

5 Recommendations

Before an application is configured, it is essential to know what the data is that should be logged, and then put together a plan around this data.

For example:

1. What kind of data will be logged?
2. Where will the data come from?
3. How much data will be logged?
4. How will the data be modeled/used/reported later on?

If logging data to a database such as SQL Server or MySQL, it is recommended that Detail Mode is used. More information regarding each individual item change is stored in this presentation. The power of a SQL query/reporting tool can be harnessed to analyze the data within the database.

Please see the section SQL Scripts for example SQL scripts that can be used to query your data.

Once a data-logging plan has been determined, begin to configure the Data Logger application to accomplish those goals. Please refer to the Example Configurations section for step-by-step configuration of the most frequently used configurations.

5.1 Stored Procedure

In this section we provide you with a variety of example SQL statements that you can use to query and analyze the data that has been logged to your database.

- Simple Insert Data

Because of all the flavors of SQL that exist, not all scripts are guaranteed to work with all databases.

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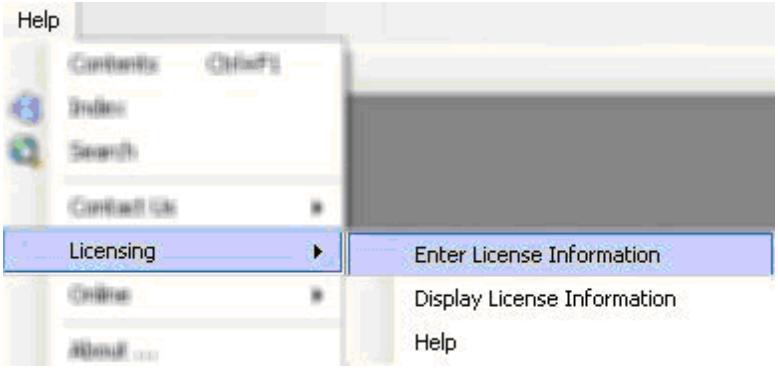
Licensing and Registration

6 Licensing and Registration

1. From the main menu select Help -> Licensing -> Enter License Information.



2. The first page of the License Wizard is informational. Click Next.

3. Choose the product from the drop down list.

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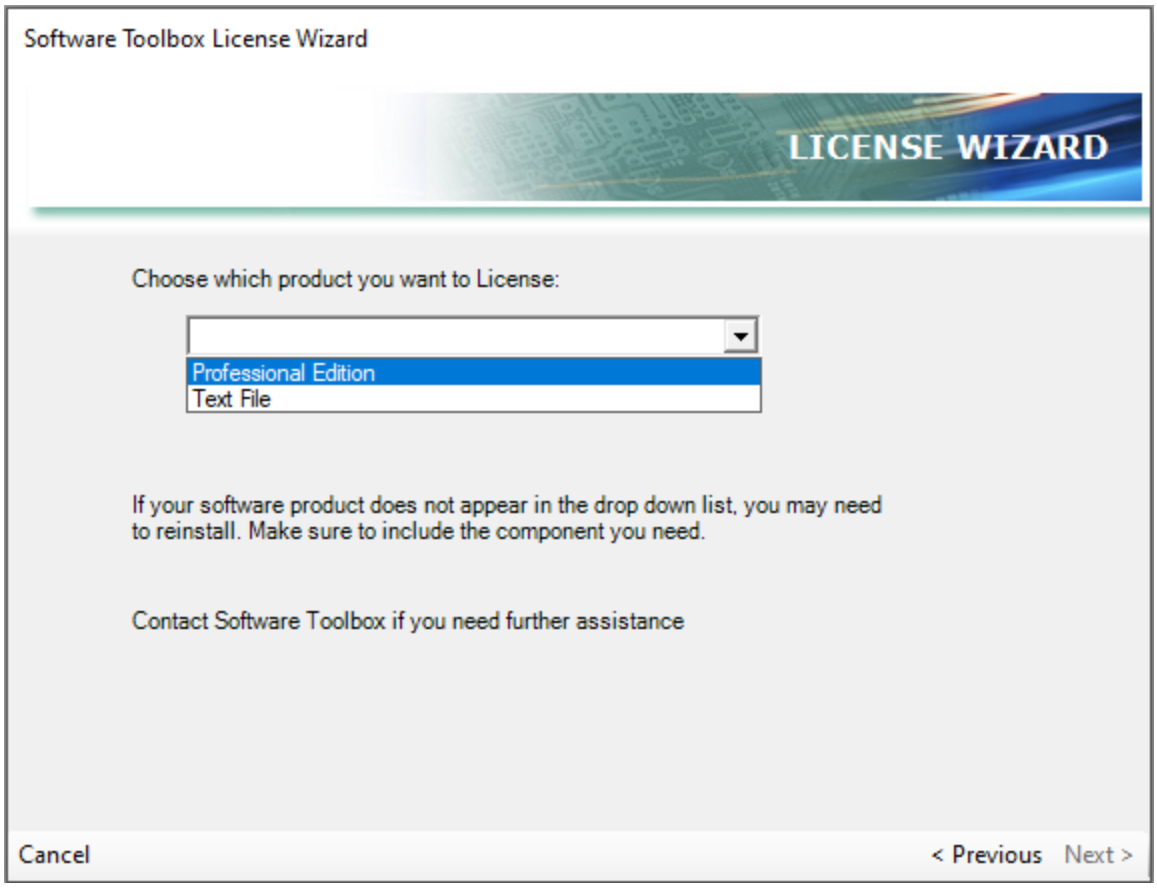

4. Enter your contact information.

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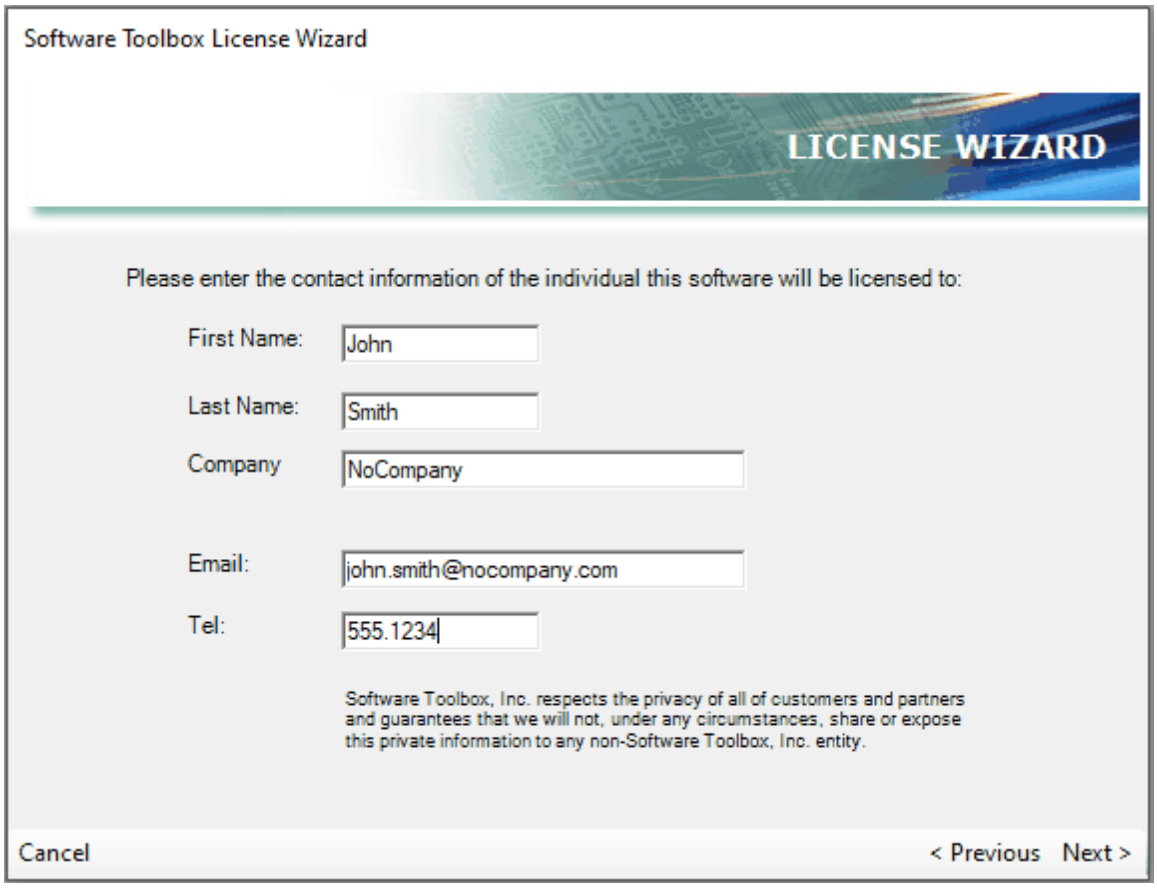

5. Enter your serial number.

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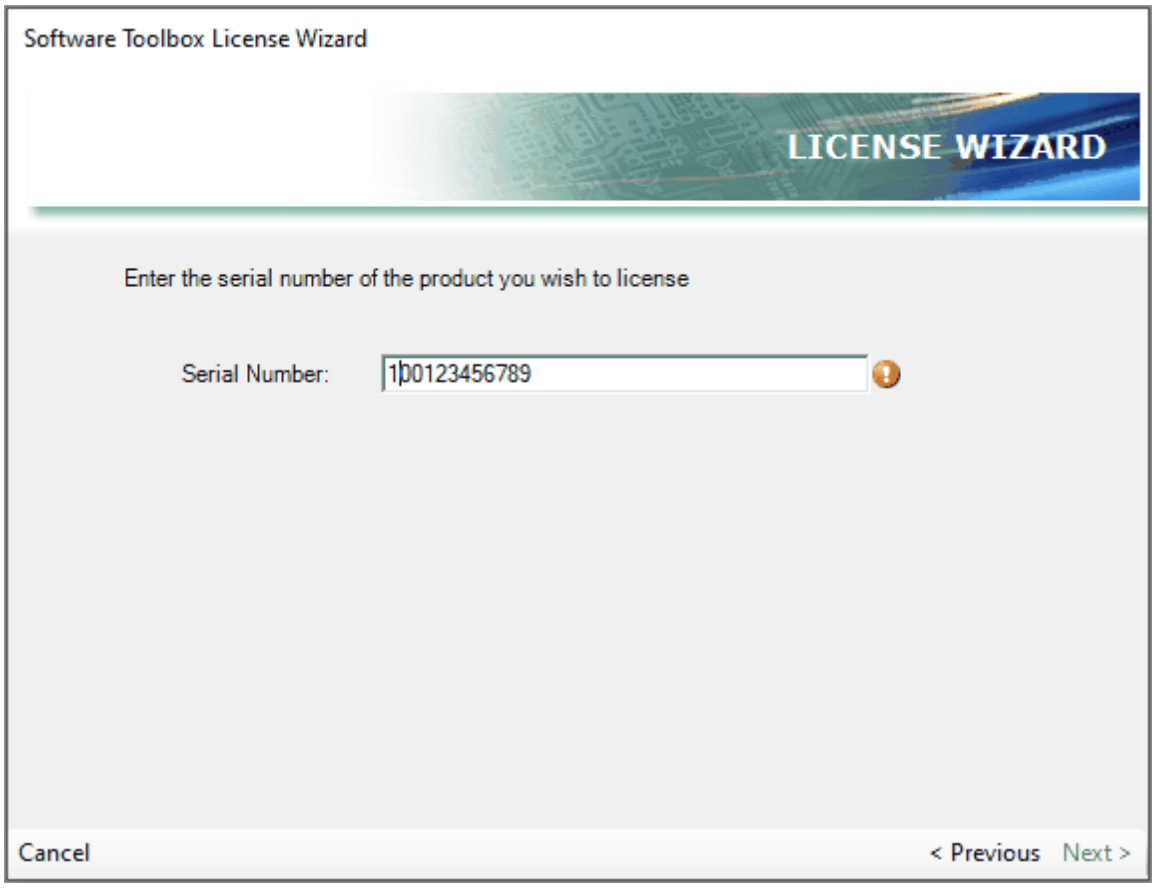

6. Choose one of three options.

- Unlock Online - Recommended but requires an internet connection
- Unlock Manually - You must obtain an unlock code from one of the following ways: http://registration.softwaretoolbox.com, email support@softwaretoolbox.com, or call (704)-849-2773. Your computer ID and serial number is required.
- Temporary License - Will activate a 10 day temporary license.

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1. Select Unlock Online and click Next.

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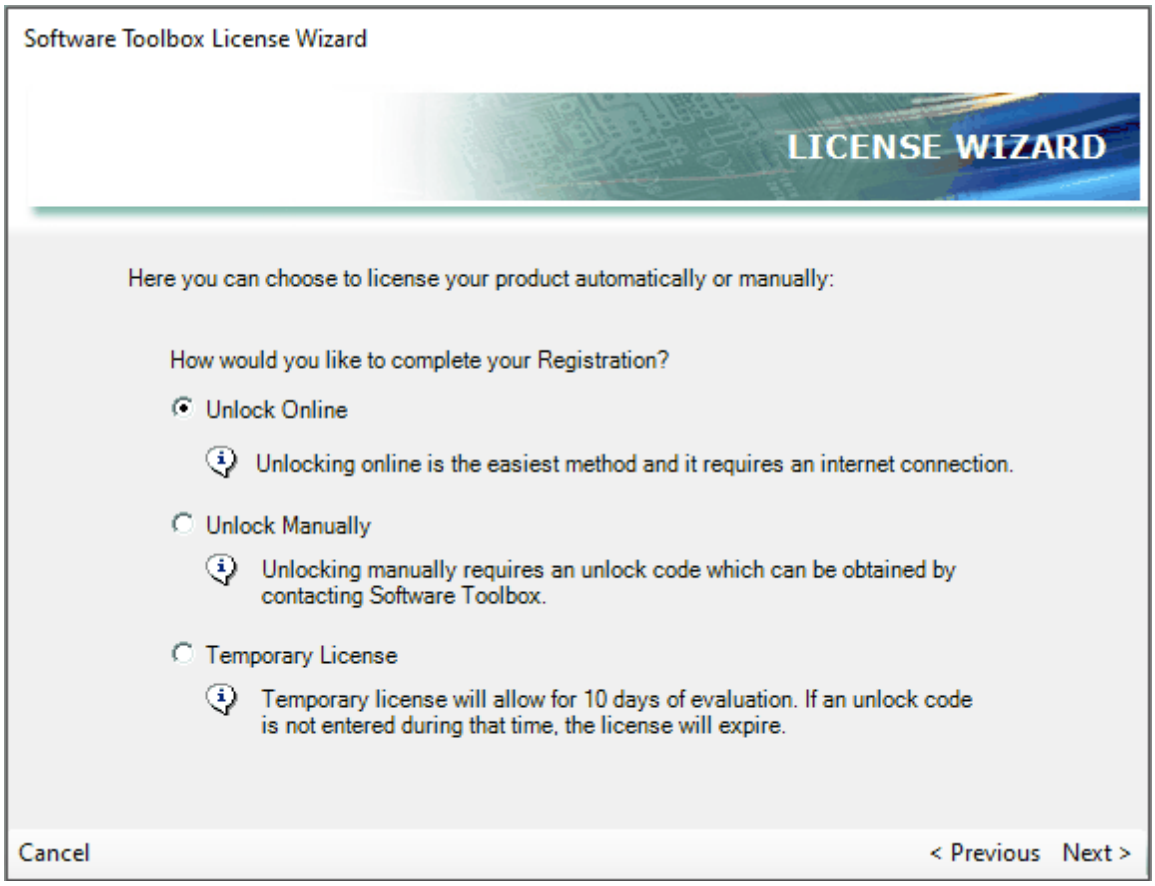

2. Click Register. A success or failure message will be displayed at the bottom. If successful click next. Otherwise contact Software Toolbox for support.

Email: support@softwaretoolbox.com

Phone: (704)-849-2773

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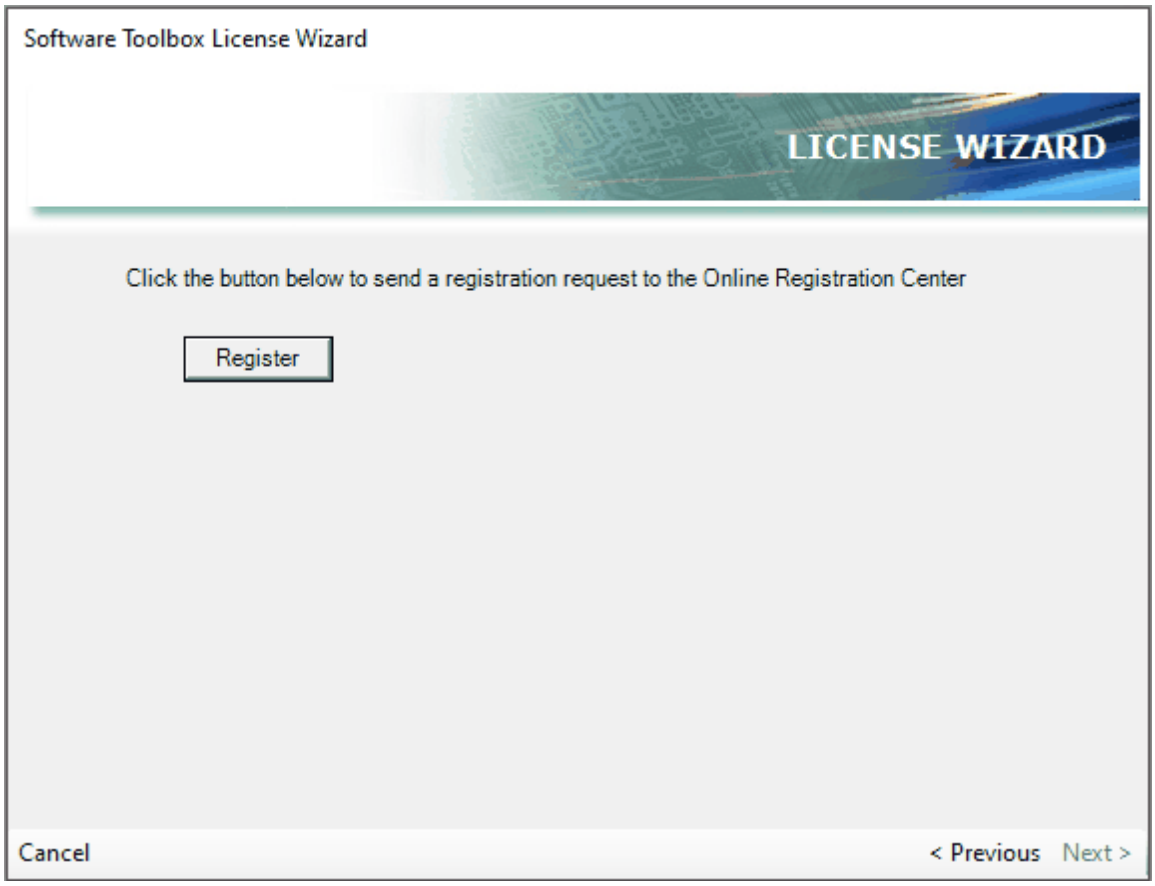

3. The registration success screen will be displayed. The Data Logger MUST be restarted for any license to take effect.

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1. Select Unlock Manually and click Next.

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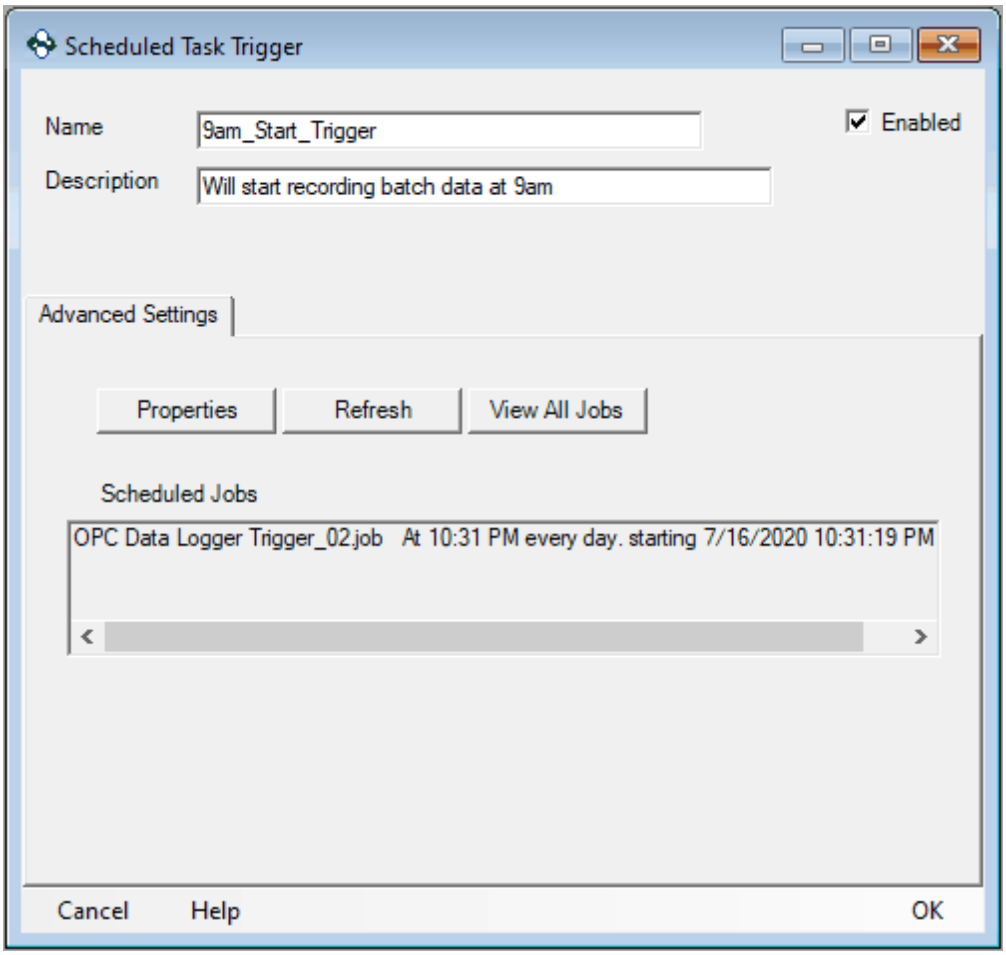

2. If you do not have an unlock code you may obtain it using one of the following methods.

Online: http://registration.softwaretoolbox.com

Email: support@softwaretoolbox.com

Phone: (704)-849-2773

Enter an unlock code and click Register. A success or failure message will be displayed at the bottom. If successful click next. Otherwise contact Software Toolbox for support.

Email: support@softwaretoolbox.com

Phone: (704)-849-2773

3. The registration success screen will be displayed. The Data Logger MUST be restarted for any license to take effect.

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1. Select Temporary License and click Next.

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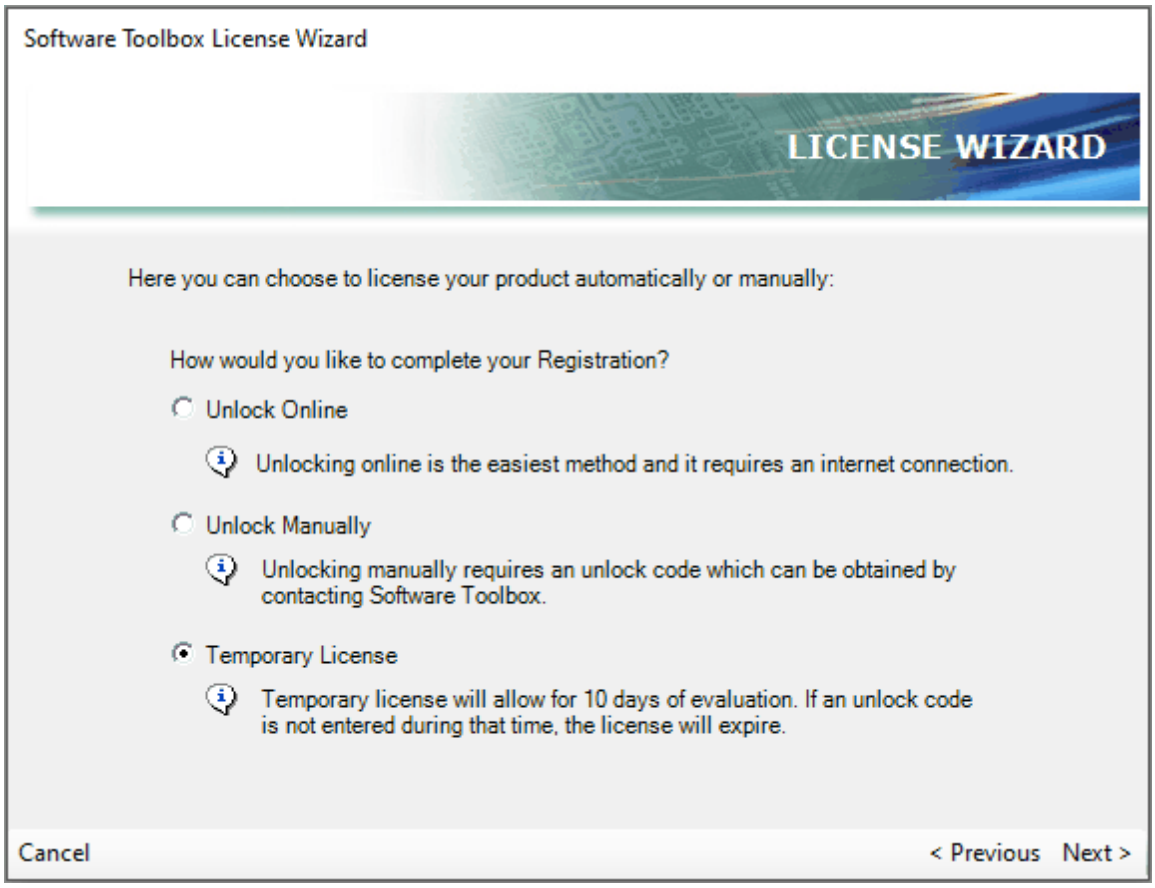

2. The temporary registration success screen will be displayed. The Data Logger MUST be restarted for any license to take effect.

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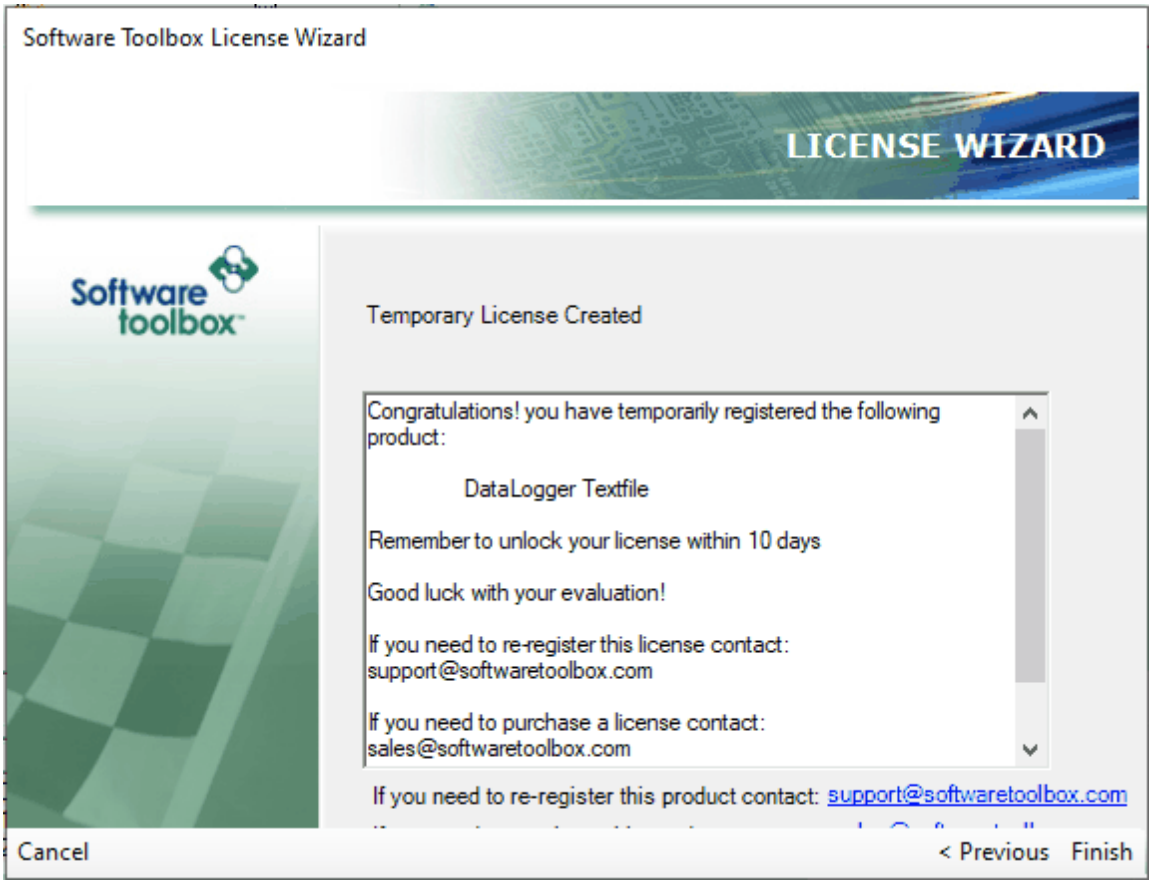

To display any license information select Help -> About from the main menu. The following page will be displayed.

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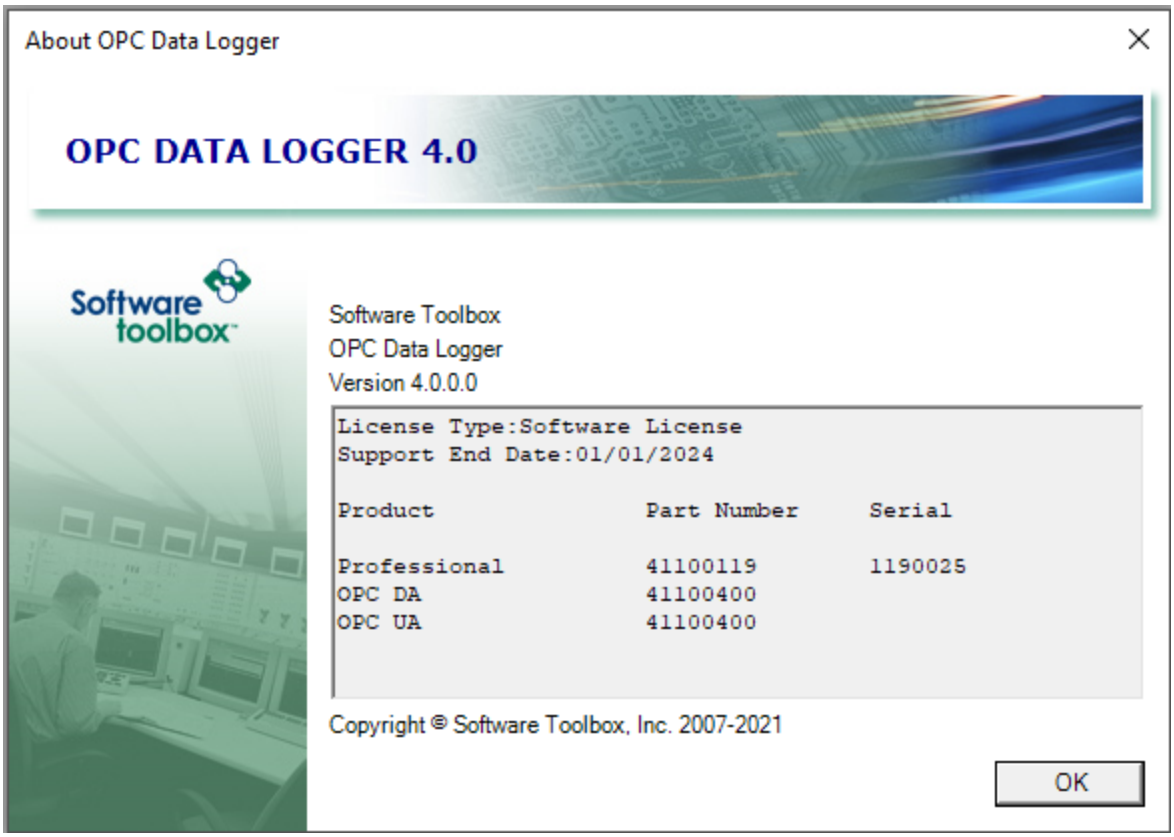

6.1 Support Agreement Update

When support is renewed for your OPC Data Logger license, a new activation code will be automatically delivered. The support expiration date determines which versions of OPC Data Logger you're eligible to run.

To update your support agreement after a purchase, please follow the steps below:

1. From the main menu select Help -> Licensing -> Enter License Information.

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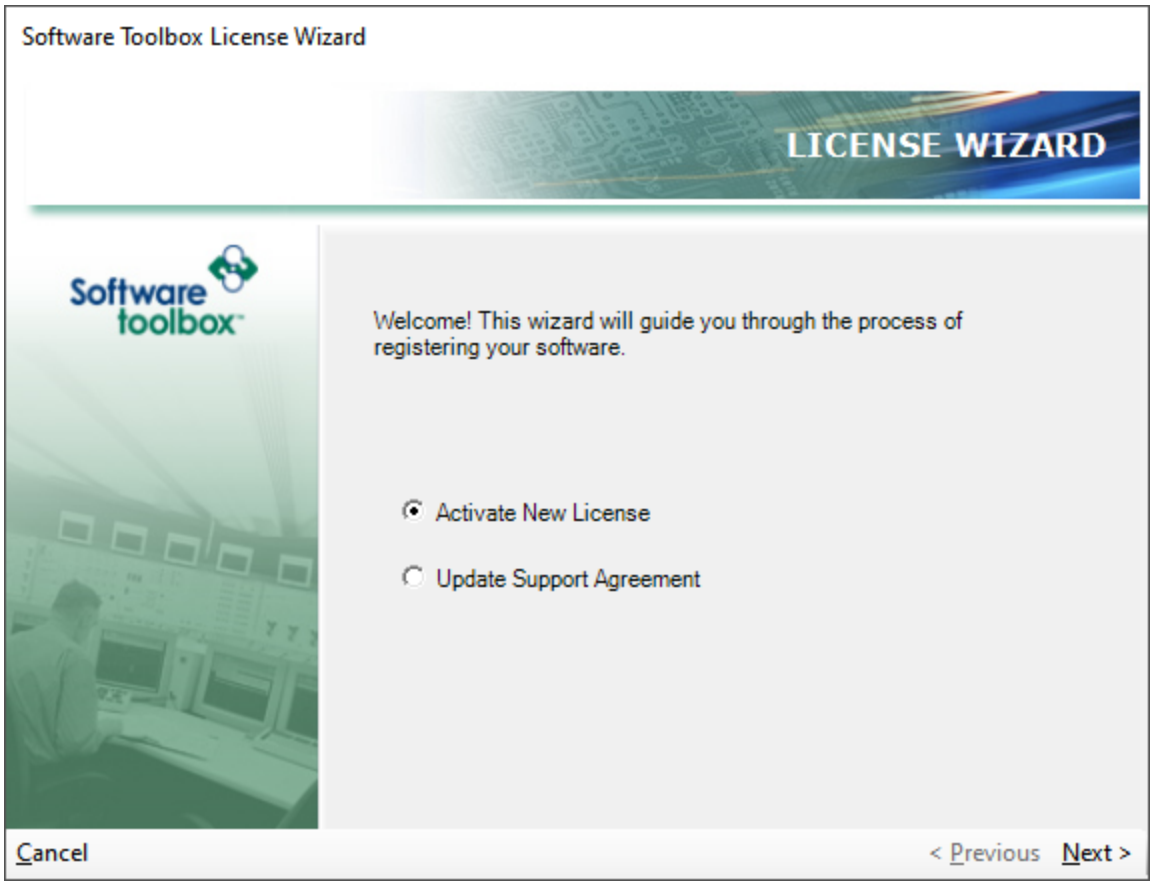

2. Select Update Support Agreement

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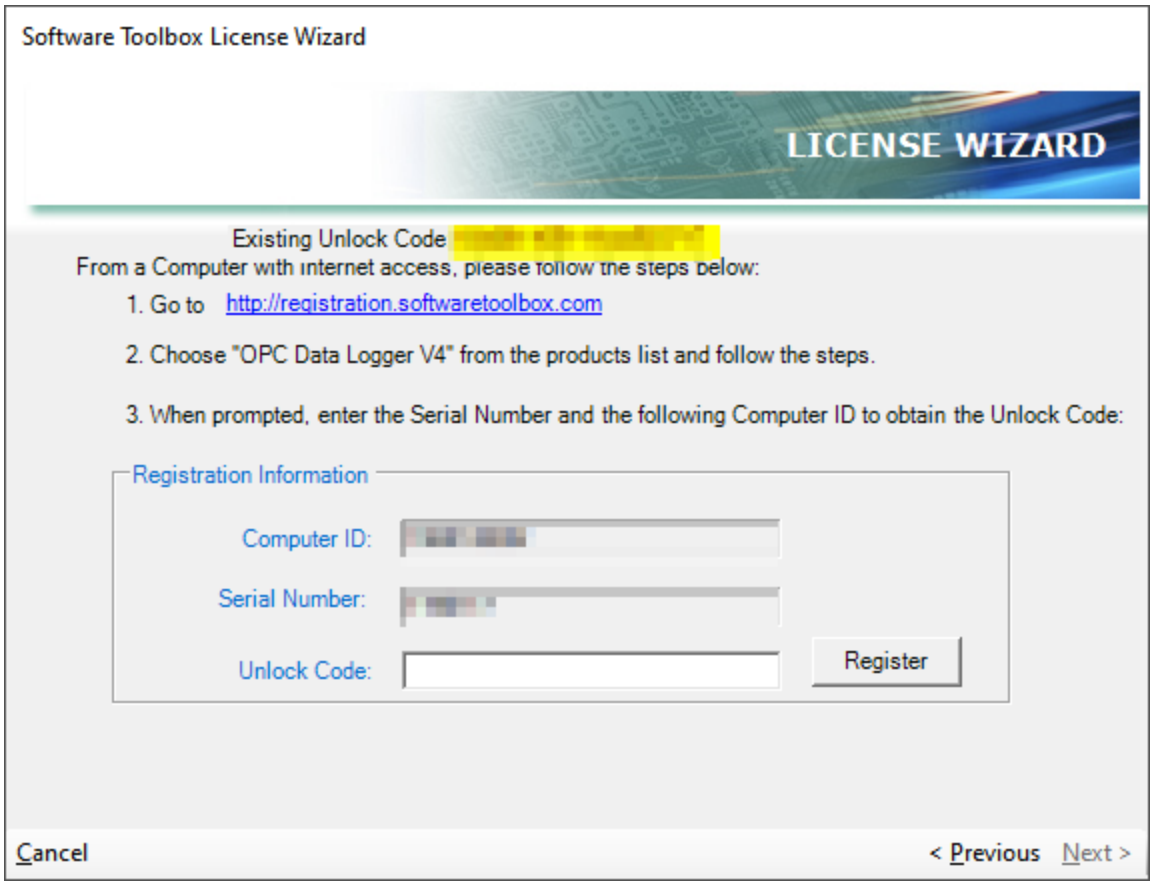

Copy the Unlock Code provided by Software Toolbox in the form. And select Register. If the computer ID has changed since the original installation, you will need to contact support@softwaretoolbox.com directly.

6.2 Types of Licenses

The Licenses below include an unlimited number of tags and OPC Server connections. Full ordering and pricing details can be found on the OPC Data Logger Ordering Page. For specific information on the License Agreement, please see that section of the help file.

41100110	OPC Data Logger Standard Edition Text File Logging
41100119	OPC Data Logger Professional Edition
Upgrades	Upgrades from earlier version contact us directly

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Support

7 Support

Product Registration:

To obtain your product registration code, please visit our online registration center.

Technical Support:

The first line of support should be to check or online knowledge-base at support.softwaretoolbox.com.

When a license of the OPC Data Logger is purchased, you receive the product, extensive electronic documentation and you are entitled to telephone technical support from our engineers for product related questions and issues.

Users of demonstration versions are encouraged to submit your questions via the personal support center; however you are welcome to call also.

Contacting us for support:

Phone: 1-704-849-2773, 8 AM to 5 PM EST (GMT-5). Licensed users get first priority for phone support.

Email: Please enter inquiries through our online system - emails to support@softwaretoolbox.com are handled after those entered through the online system.

Support Fax: 1-704-849-6388

7.1 General

7.1.1 Options

The options can be accessed by:

1. Opening the Data Logger Configuration.
2. Opening the Tools menu.
3. Choosing the Options option.

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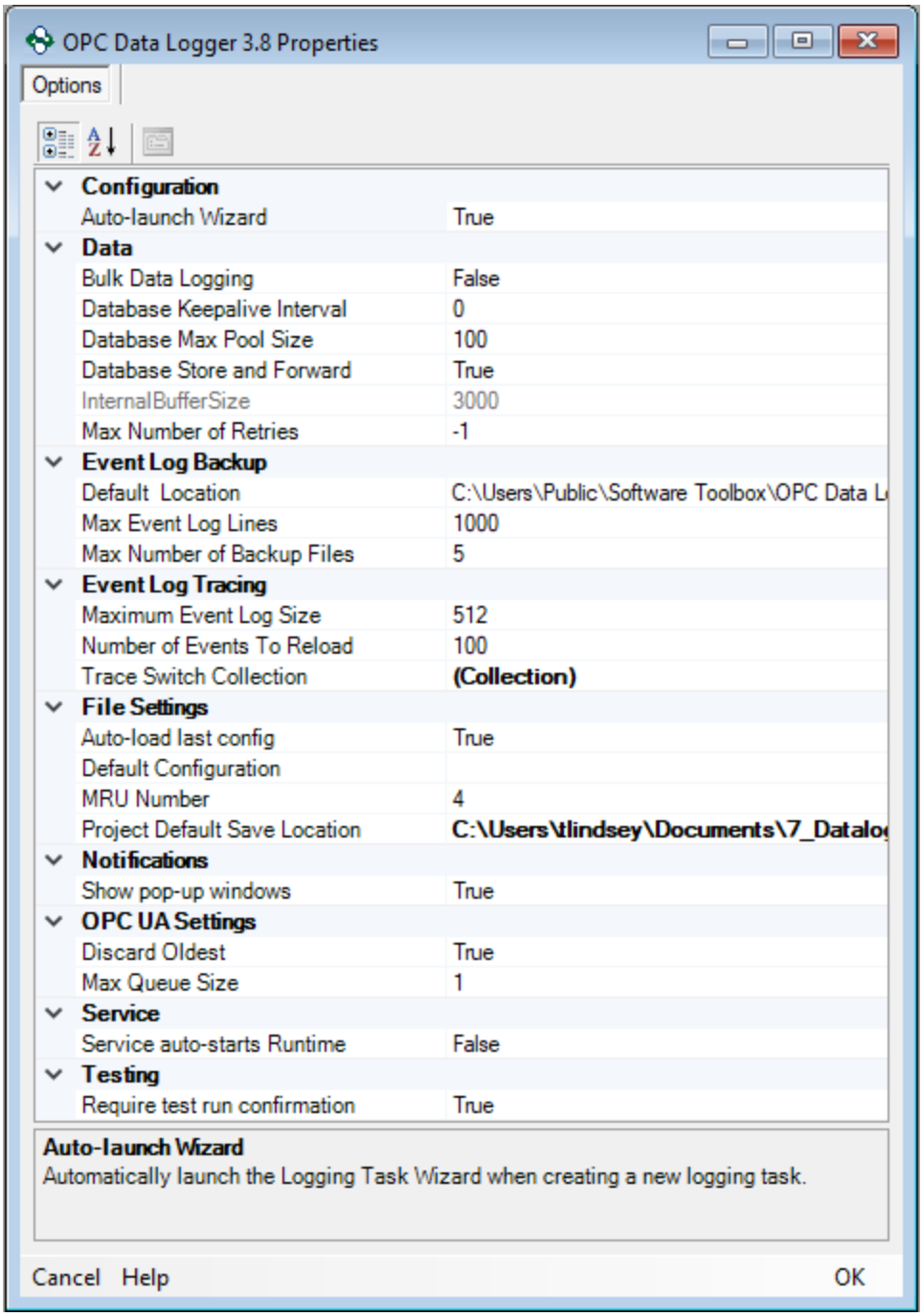

The options currently available are:

Configuration

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- Auto-launch Wizard: When the Data Logger Application starts, if no configuration file is loaded/present, then the Logging Task Wizard will be automatically launched if this value is set to True.

Data

- Bulk Data Logging: When set to "True," Data Logger will send inserts to a database in blocks instead of sending individual inserts per logged value
- Database Keepalive Interval: The length of time that OPC Data Logger waits on a keepalive response from the destination Database before attempting a reconnect
- Database Max Pool Size: The maximum number of simultaneous connections the OPC Data Logger will make to a destination server
- Database Store and Forward: When enabled, OPC Data Logger will locally save logged values to the hard drive in the event that connection to a database is lost. Once the Data Logger reconnects to the database, the locally logged values are inserted into the database before resuming normal logging. When enabled, InternalBufferSize is disabled.
- InternalBufferSize: This number represents how many rows of data will be buffered in the queue if the connection to the Data Storage is lost. The value defaults to 3000 rows of data. This means when logging in table mode, there will be a total of 3000 log events. When logging in detail mode, this will log 3000 data point changes. NOTE: The buffer is stored in internal memory of the application.
- Max Number of Retries: The number of retry attempts Data Logger will make when an initial log attempt fails.

Event Log Backup

- Default Location: The location where the event log files will be maintained
- Max Event Log Lines: The maximum number of events to log per file
- Max Number of Backup Files: The number of files that the OPC Data Logger will maintain before overwriting the oldest file.

Event Log Tracing

- Maximum Event Log Size: The Maximum Log Size in Windows Event Viewer. This value is in KB and defaults to 512.

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- Number of Events to Reload: The number of events the Configuration will load into the Event Log when starting up or refreshing.
- Trace Switch Collection: The Trace Switches tells what level of information we log to the Event Log. These can be very useful to help diagnose problems. The levels are Off, Error, Warning, Info and Verbose. Off meaning no information will be logged and Verbose meaning the most information will be logged. All Trace Switches default to Warning. NOTE: Changing these Trace Switch Levels can impact performance. It is NOT recommended to use any level higher than Warning in a production environment.

File Settings

- Auto-load last config: Automatically load the last used configuration
- Default Configuration: When starting the data logging engine, the file specified in this option will ALWAYS be used.
- MRU Number: How many *.DataLogger files to remember and list within the File menu.
- Project Default Save Location: The location where OPC Data Logger will store newly created Data Logger projects.

Notifications

- Show pop-up windows: Whenever data logging starts or stops, show a pop-up window beside the Notify Icon.

OPC UA Settings

- Discard Oldest: Discards the oldest events in case more events are provided than should be queued.
- Max Queue Size: Specifies the number of queued events that the OPC Data Logger will ask an OPC UA Server to maintain, and the number of buffered events that the OPC Data Logger is prepared to process in a single Publish. The default value of 1 disables queuing. (Maximum Value: 99)

Services

- Service auto-starts Runtime: Runtime starts when the service launches.

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Testing

- Require test run confirmation: Whenever a test run (see Test Logging) is requested, the test-run confirmation acknowledgments dialog will show.

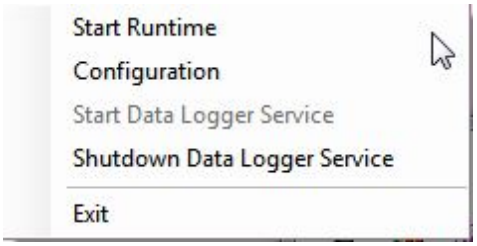
7.1.2 Notify Icon

The Notification Icon must be launched from the start menu to run in the system applet tray. It can be run by selecting 'System Tray Icon' in the start menu.

While the Data Logger is running a small icon (if launched) will be located in the system applet tray which is where the Windows Clock is displayed. The icon(s) you may see are shown here:

Icon	Description
	The OPC Data Logger Service has started, but Runtime is not Active. This indicates that the application has not been instructed to start Runtime.
	The OPC Data Logger Service is not started.
	The OPC Data Logger Service has started, but Runtime is not Active because there is no configuration loaded/specified.
	The OPC Data Logger Service has started and Runtime is Active.

The icon does contain a context-sensitive menu which can be opened by right-clicking on those icons shown above:



Description of options:

- Start/Stop Runtime: While the OPC Data Logger Service is running, you can control it by turning the Runtime on or off.
- Configuration: Launches the Data Logger Configuration window.

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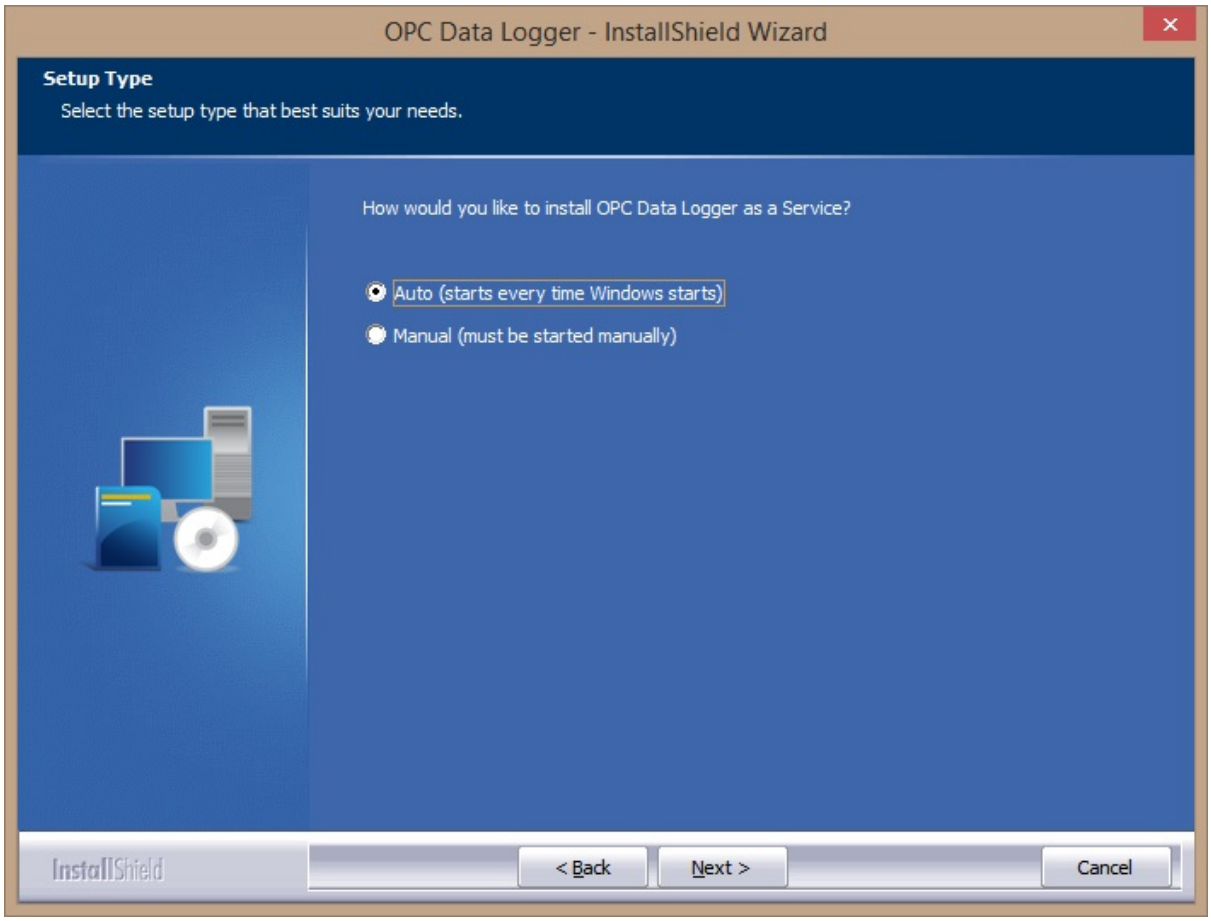
- Start Data Logger Service: Starts the service, if it is not already running.
- Shutdown Data Logger Service: Stops logging and shuts down the data logging service.

7.1.3 Service

The OPC Data Logger must run as a service to log data beyond simple testing. There is no option to run in an application mode. The data-logger has been designed this way to allow for automatic restarts on failure or shutdowns. It also allows the administrator to secure the service from being tampered with or shutdown by users.

Setup During Installation

You can setup the service run options during the installation. You can set it to run automatically at startup or for manual startup.



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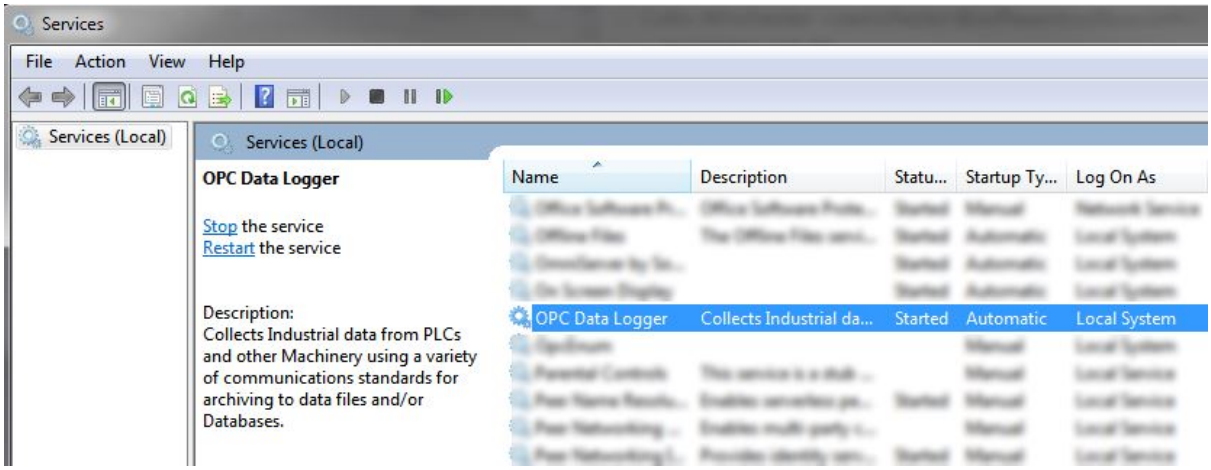
Automatic Startup

If you have selected Auto-start for the service selection during installation, you should see the following when looking at the Services menu. If auto-start is enabled and the service has not been manually stopped you will see the status as started and the startup type as automatic.



Manual Startup

If manual startup has been selected, the service does not automatically start during startup. In Figure 2 above, you will see the Startup Type equal to Manual and the status will be stopped, unless it has previously been started. There are two ways to manually start the OPC Data Logger Service.

Starting from the Services Console

In the Services console, highlight the OPC Data Logger Service and click Start the service in the description pane to the left. You may also right click on the service and click Start on the pop-up menu that appears.

Starting from the Start Menu

You may also start the OPC Data Logger Service from the start menu:

Start > Program Files > Software Toolbox > OPC Data Logger > Launch OPC Data Logger Service.

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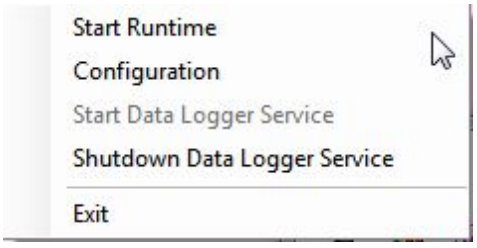
Stopping the Service

If you need to stop the service, you can stop it from the Services console. Right click on the service name and click stop or highlight the service name and click Stop the Service. You can also stop the Service from the Icon at the Windows System tray, if it is running. Right click on the Icon and choose - Shutdown Data Logger Service.



7.1.4 Saving & Loading Configuration

The configuration is saved into a file with a *.DataLogger file. This file type can only be loaded into the application. This enables you to create multiple configuration files that can be ported from one computer to another.

Opening OPC Data Logger Configuration Files

1. Open the Data Logger user interface. See Launching the Application for instructions on how to open the client configuration user interface.
2. Open the File menu and choose the Open option.
3. The File Open dialog will appear, allowing you to select an existing *.DataLogger file.
4. Selecting a *.DataLogger file and clicking the OK button will cause the configuration to be loaded.

Notes:

- Only 1 *.DataLogger configuration file can be loaded.
- Loading a *.DataLogger configuration file will require the client-application to close down any open configuration files.

Saving OPC Data Logger Configuration Files

1. Open the Data Logger user interface. See Launching the Application for instructions on how to open the client configuration user interface.

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2. Open the File menu and choose the Save option.
3. The File Save dialog will appear, allowing you to specify the name of a new, or an existing *.DataLogger file.
4. Clicking the OK button will cause the configuration to be saved.

Importing configuration files from previous versions of OPC Data Logger

Please contact Support or see Import Previous Data Logger Configuration

7.1.5 Import Previous Data Logger Configuration

Users of the Software Toolbox OPC Data Logger version 2.x can import their configuration into the OPC Data Logger application. Within the File menu there is an Import sub-menu where you will find the option Previous Data Logger 2.x. Clicking this option will open a File Open dialog where you will locate and select a *.ODL file.

The application can convert existing OPC Data Logger Solutions into the new configuration format.

This import feature is an "additive" function, this means that when you import the configuration a new set of objects will be added to your current configuration. This means that your existing configuration-settings will be retained, and the newly imported settings will be added to them.

7.2 DCOM

Distributed COM (DCOM) is a Microsoft technology that provides Windows applications with the ability to connect from one computer to another on a LAN, a WAN, or an Internet connection. For example, DCOM allows the OPC client application to communicate from one computer to the OPC server on another computer. DCOM can be quite potent and enable many interesting applications. However it is important to understand the details to ensure OPC works properly using DCOM.

Software Toolbox DCOM Tutorial

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7.2.1 Remote DCOM

The OPC DataLogger runs as a service for automatic, unattended startup when you run the product in production. When you click "Start Logging", you are actually sending a command to the OPC DataLogger Service to tell it to start.

The OPC DataLogger Service has to make connections to your OPC servers, which if they are remote and not on the same computer as the OPC DataLogger, will require some special settings to be made. Your OPC Servers have to be able to make connections to the OPC DataLogger Service so subscribed data will call back.

Importance of User Accounts

The most important of these will be

- The user account which the OPC DataLogger Service runs as on the client PC,
- The user account that the remote OPC Server runs under, either on the desktop or as a service.

The fundamental important concepts regarding user accounts are:

- The OPC DataLogger service must run under a named user account. You may NOT use the "System" account if you are going to connect to Remote OPC Servers. The "System" account has no network privileges!
- The user account that the OPC DataLogger service runs under MUST have permissions to
- Be able to launch a service - i.e. the OPC DataLogger service. This means that if the account is not an account with Administrative privileges, you will have to explicitly grant the user the right to launch a service. We recommend that you use an account with Administrative rights to run the OPC DataLogger service.
- Access the remote computer where your OPC server is running and
- To launch and access the specific OPC server that you are wishing to connect to
- In order to receive callbacks from the OPC Server if you are using subscription based reads, which is the recommended way for continuous data collection, then the computer where OPC DataLogger is running must
- Allow the user account under which the remote OPC server is running to access the computer where OPC DataLogger is running.

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Failure to cover both of these areas will result in situations where you can connect to the OPC server, browse it, configure items, but when you go to "Start Logging" or even do a "Test Run", you will fail to get data back in the OPC DataLogger.

When talking about user accounts, it is VERY IMPORTANT to differentiate between "Local" accounts and "Domain" accounts. User "JoeSmith" setup as a local account on your PC is NOT the same user as "MyDomain\JoeSmith", even the they both have "JoeSmith" in the account name and might have the same password.

Please now review :

Important Concepts and Examples Regarding Workgroups and Windows Domains

7.2.1.1 OPC DataLogger Remote DCOM Specifics

The OPC DataLogger runs as a service for automatic, unattended startup when you run the product in production. When you click "Start Logging", you are actually sending a command to the OPC DataLogger Service to tell it to start.

The OPC DataLogger Service has to make connections to your OPC servers, which if they are remote and not on the same computer as the OPC DataLogger, will require some special settings to be made. Your OPC Servers have to be able to make connections to the OPC DataLogger Service so subscribed data will call back.

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Please now review :

Important Concepts and Examples Regarding Workgroups and Windows Domains

7.2.1.2 DCOM and Services

Please read the User Permissions topic and the Workgroups and Domains topic so that you are familiar with the DCOM settings before attempting to setup OPC Clients as a Service.

If your OPC Client is running as a service and is on the SAME PC as your OPC Server then it is fine for the OPC Client to run under the System Account.

IMPORTANT NOTE:

Running an OPC Client as a service may cause callback issues.

On the OPC Client and the OPC Server PC:

You will need to grant the NETWORK user account Local and Remote Access in your DCOM settings. Starting in XP SP2, to the current operating system there are 4 places you must grant these permissions. To run an OPC Client as a service the “SYSTEM” and “INTERACTIVE” accounts both need to be granted access in your DCOM settings. For the

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NETWORK user, add the user and grant the permissions below outlined in the table.

Access Permissions	
Edit Limits:	Local Access and Remote Access
Edit Defaults:	Local Access and Remote Access

Launch and Activation Permissions	
Edit Limits:	Local Launch, Remote Launch, Local Activation, and Remote Activation
Edit Defaults:	Local Launch, Remote Launch, Local Activation, and Remote Activation

If the above does not work:

Run the OPC Client under a named user account.

Since the OPC Client running as a Service will be running under a named user, whether you are using Workgroups or Domains, there is one other important account that must be added to your DCOM settings on BOTH computers. Consider granting "EVERYONE" the same rights as the "NETWORK" "SYSTEM" and "INTERACTIVE" accounts.

Full DCOM Configuration for your specific operating system can be found here.

7.3 Errors

The OPC Data Logger application may show the following errors, listed alphabetically:

Error	Description
Asynchronous Read results received from the Server are BAD (cannot be trusted) because the MasterError = '...'	The Data Logger issued an asynchronous read request, and the results of that request were received with errors. This means that all of the data within that update are all of bad quality.
Cannot complete startup on '<Logging Task>'	The specified Logging Task could not start up and initialize. Further details of

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Error	Description
	the reason will be embedded within this message.
Cant generate mappings from Groups because no groups exist	An attempt to automatically generate the Table Mode mappings could not be made because no Groups have been defined. Verify your configuration.
Connection Failed: '...'	The connection to the specified component failed. This usually indicates a problem with the Data Collection engine. The reason for the failure will be available elsewhere within the text.
Connection to Server closed. Server status '...'	This error is typically thrown by the Data Collection component. The error is likely because the data source is no longer connected. You may need to re-initialize the application if your configuration is not set to automatically revive lost connections.
Could not open Configuration file	An error occurred while opening the configuration file (*.DataLogger). Perhaps the file does not exist or the data is corrupted.
Data Storage '...' encountered Exception '...'	The specified Data Storage component encountered a problem unexpectedly. The details of the error will be available elsewhere within the text.
Engine not specified	Means that an attempt was made to connect to a Data Collector or Data Store, but the underlying interface has not been specified. Verify your configuration is setup correctly.
Error shutting down DataLogger Service: '...'	An attempt was made to shut down the Service which failed. The reason for the failure will be specified elsewhere within the message.
Error starting DataLogger Service: '...'	An attempt was made to start the Service which failed. The reason for the failure will be specified elsewhere within the message.

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Error	Description
Evaluation expired '...'	The specified component is running as a demo. The application will need to be restarted.
Filename invalid	Indicates that an attempt was made to specify a file whose name is not legal, i.e. not compatible with the underlying Operating System.
No Group specified	An attempt was made to read or subscribe to Items, but no Group was specified. This indicates that the Logging Task does not contain any groups. Check your configuration.
No Items specified within the Group	An attempt was made to read or subscribe to Items, but the specified Group does not contain any items. Verify your Logging Task configuration.
No Plugins were found at '...'	The application could not find any components at the specified location. This would indicate that the files have been deleted or not installed. Re-installing the product should fix this problem.
Not enough disk space	This error may be thrown by the Text File logger which contains a fail-safe method which causes it to stop logging if the remaining disk space goes below a specified required disk space. Check your hard disk space.
<null> value received	This error is typically thrown by the Data Collection engine. This error means that the value received is null, consequently meaning that the data is bad. If you see this message, it usually indicates that an OPC Server is not truly OPC Compliant.
'<Logging Task>' does not have a Data Collector	The specified Logging Task cannot start logging because no Data Collection engine has been specified. Verify your configuration settings.

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Error	Description
Registration Failed. No response detected.	While attempting to register the software online, the call to register the software failed with no response from the internet. Make sure that your computer is connected to the internet. You may need to temporarily close your firewall or allow the application to pass through firewall.
Table configuration incompatible. There are required fields that have not been mapped yet.	The database Table configured for logging data to requires values for specific fields, and the current configuration does not provide a value for all of these required fields. This means that there is no possibility of logging data until this issue is corrected. The solution will be to open the Database Properties, go to the Mappings tab and to verify the settings in there.
Table Schema Changed	This error is thrown by a Database Logging component. While initializing the Logging Task for data collection the engine will query the schema of the Table or Stored Procedure that will be used for logging data. If that schema differs from what the configuration remembers then this error will be thrown. The solution will be to open the Database Properties, go to the Mappings tab and to verify the settings in there.
There are no active data stores in: '<Logging Task>'	The specified Logging Task cannot start logging because all of the Data Stores associated with the Logging Task are disabled. Open the Logging Task properties and then go to the Log to tab and enable at least 1 data store.
Unable to add group, error '...'	This error is typically thrown by the Data Collection component. The error is likely because the data source rejected the request, typically seen in OPC Servers. The solution is check the error code and to consult the OPC Server

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Error	Description
	documentation for possible reasons that might cause this.
Unable to add items to group, error '...'	This error is typically thrown by the Data Collection component. The error is likely because the data source rejected the request because the specified items do not exist. You will need to verify that your configuration contains Items (within the Group properties) which are valid and do exist within your data source.
Unable to connect to Service. No connection could be made because the target machine actively refused it.	This is not a serious problem. The error is thrown because either the Configuration GUI or the Notification Icon was unable to establish a socket connection to the Windows Service. This may be because: • The service is not running • Firewall configuration is blocking the applications
Unable to load Plugin	Careful attention to the details of this message will specify the reason behind the failure. This kind of problem usually occurs as a result of a required dependency file (*.dll) that cannot be found in the product installation directory.
Unable to register online: '...'	While trying to register the software online, the transaction failed. The reason for the failure will be present elsewhere within the text. Make sure that you do have a connection to the internet. Also make sure that the information you have entered is 100% identical to the information provided at the time of purchase.
Unable to validate items. Error '...'	This error is typically thrown by the Data Collection component. The error is likely because the items within the configuration are not valid, i.e. perhaps the names are incorrect or the items

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Error	Description
	simply do not exist at the data source. Verify your configuration settings.

7.4 General Data Collector Error Handling

Depending on the nature of the type of error countered, one of two actions may take place:

- The connection is closed and re-opened, consequently re-initializing the entire data collection.
- The connection is closed and the Logging Task has been told to stop logging.

Obviously the difference between the two is quite large. Here is a list of the types of problems that may be encountered and the action item (above) that may happen as a result:

Event	Action
Data Source is not found	If the Data Source cannot be found because it is not installed for example, then the Logging Task will be stopped.
Data Source is not responding	The connection will be continuously retried, with pauses of approximately 10 seconds in between.

OPC Specific Behavior

Event	Action
Invalid Class ID	If the Data Source cannot be found because it is not installed for example, then the Logging Task will be stopped.
GetStatus() returns NO_CONFIG	The connection will be continuously retried, with pauses of approximately 10 seconds in between.
GetStatus() returns E_FAIL	The connection will be continuously retried, with pauses of approximately 10 seconds in between.
GetStatus() call fails altogether	The connection will be severed and will be continuously retried, with pauses of approximately 10 seconds in between.

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7.5 Data Storage Errors

The Data Store you use will greatly influence the kinds of errors that you may experience:

- Text File Errors
- SQL Server Errors
- Microsoft Access Errors
- ODBC Errors
- MySQL Errors

7.5.1 General Data Storage Errors

If there is a problem with a Data Store logging the data, then the record that is trying to be logged will remain within the buffer until the record is logged. However, depending on the nature of the type of error countered, one of two actions may take place:

- The Data Store is closed and re-opened, consequently re-initializing any connection.
- The Data Store is closed and the Logging Task has been told to stop logging.
  The Logging Task will be told to stop logging if no other data stores exist within the Logging Task.

Text File Behavior

Event	Action
Access Denied	Data store stops, and notifies any Parent Logging Tasks. This may mean that the parent Logging Tasks stop logging as a result.
Invalid Path	Data store stops, and notifies any Parent Logging Tasks. This may mean that the parent Logging Tasks stop logging as a result.
General I/O Problem	The Data Store will be reinitialized, continuously.

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General Database Behavior

Event	Action
Database not available	The Data Store will be reinitialized, continuously.
Login Failure	Data store stops, and notifies any Parent Logging Tasks. This may mean that the parent Logging Tasks stop logging as a result.
Invalid SQL statement	Data store stops, and notifies any Parent Logging Tasks. This may mean that the parent Logging Tasks stop logging as a result.
Bad Configuration/Mismatch	Data store stops, and notifies any Parent Logging Tasks. This may mean that the parent Logging Tasks stop logging as a result.

7.5.2 Text File Errors

Error	Description
Access denied	You do not have the necessary privileges to access the specified file.
Filename invalid	Indicates that an attempt was made to specify a file whose name is not legal, i.e. not compatible with the underlying Operating System.
Not enough disk space	This error may be thrown by the Text File logger which contains a fail-safe method which causes it to stop logging if the remaining disk space goes below a specified required disk space. Check your hard disk space.

7.5.3 SQL Server Errors

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Error	Description
Login Failure	The specified login credentials are incorrect, or the database rejected access to the database due to a lack of permissions.
SQL Server does not exist or access denied	This error can mean that either: 1. the specified login credentials do not have permissions to access the database 2. the SQL Server is offline and not-responding. Note: This error is more applicable to the ODBC connectivity to a SQL Server, which is not recommended.

7.5.4 Microsoft Access Errors

Error	Description
Cannot start your application. The workgroup information file is missing or opened exclusively by another user.	This error may be the result of: 1. The specified *.MDB file in the MS Access Property Pages is not available 2. The login credentials are incorrect. 3. The file has been opened by another user/application exclusively.
Login Failure	The specified login credentials are incorrect, or the database rejected access to the database due to a lack of permissions.
No error message available, result code: '...'	A miscellaneous error code that will contain more information regarding the nature of the error.

7.5.5 OBDC Errors

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Error	Description
Cannot start your application. The workgroup information file is missing or opened exclusively by another user.	This error may be the result of: 1. The specified *.MDB file in the MS Access Property Pages is not available 2. The login credentials are incorrect. 3. The file has been opened by another user/application exclusively.
Login Failure	The specified login credentials are incorrect, or the database rejected access to the database due to a lack of permissions.
No error message available, result code: '...'	A miscellaneous error code that will contain more information regarding the nature of the error.

7.5.6 MySQL Errors

Error	Description
Cannot connect to database	Verify that the IP Address and Database Name fields are correctly set in the MySQL Property Pages.
Login Failure	The specified login credentials are incorrect, or the database rejected access to the database due to a lack of permissions.
Unable to connect to any of the specified MySQL hosts	Verify that the IP Address and Database Name fields are correctly set in the MySQL Property Pages.

7.6 Error Reporting

The Data Logger contains a number of tools to help with Troubleshooting. The following is data that is helpful for our Technical Support team:

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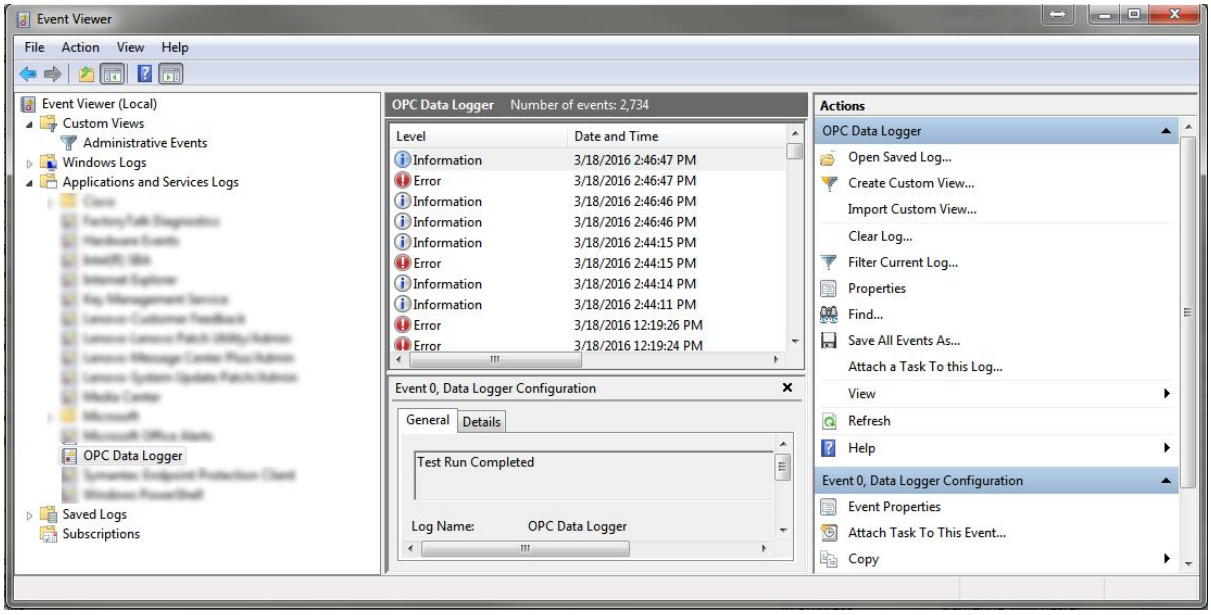
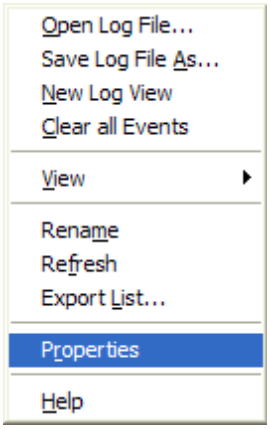
Event Logs

First, there is the event log window at the bottom of the dialog. Currently this dialog will show the information for the currently running application session. All log files are stored within the Windows Event Log, within its own OPC Data Logger category, as shown in this screen capture:



The Windows event log allows you to configure the log settings by simply right-clicking on the OPC Data Logger logbook and then choosing properties:



NOTE: From the above context menu, you can Export List... allowing the events to saved into a Text file, which can then e-mailed to support.

From there, you can configure the behavior of the log:

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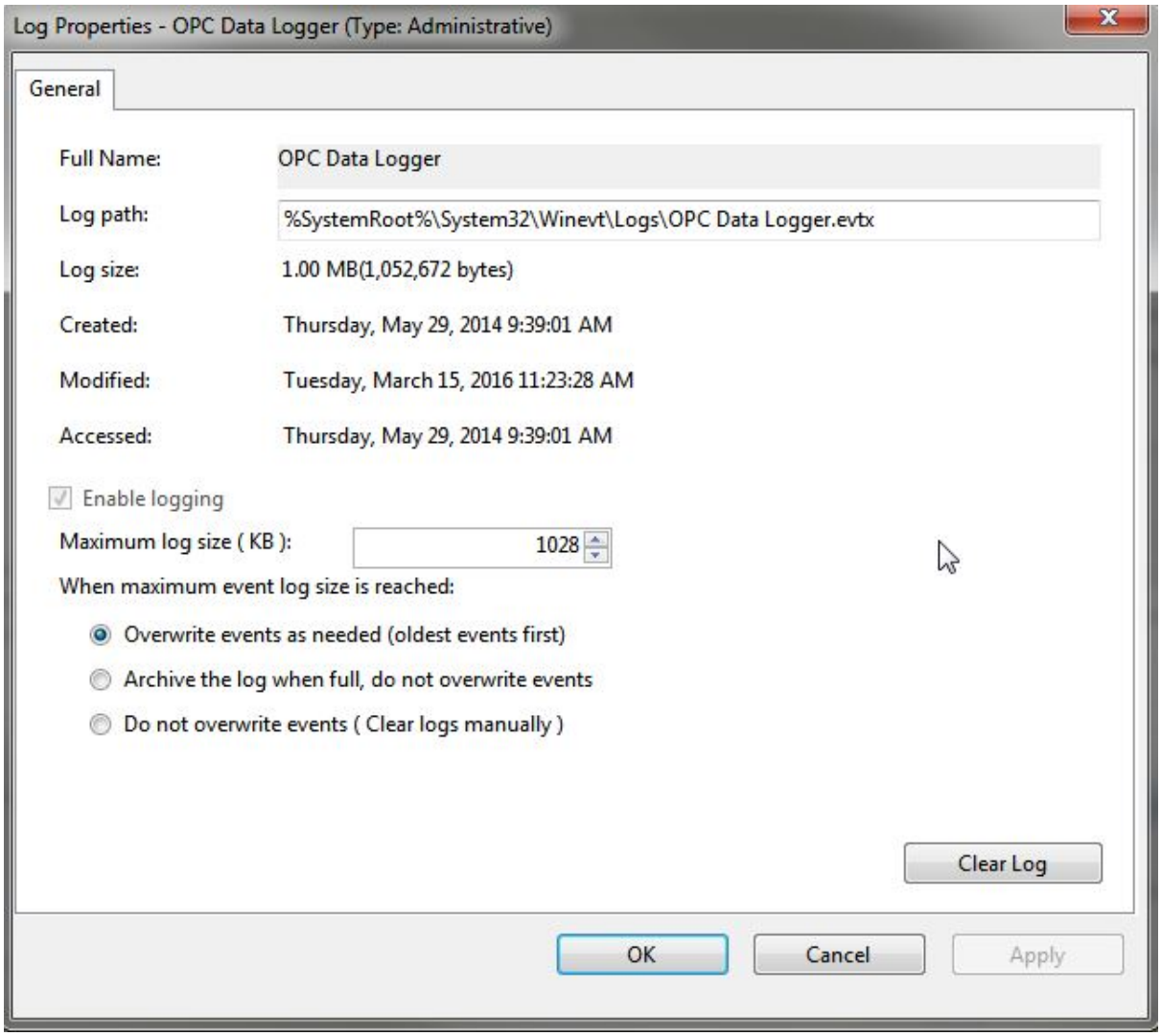

Unexpected Errors

As hard as we try, some un-handled errors may slip through the net. The application has some internal tools to help detect when this happens which will consequently open the following window:

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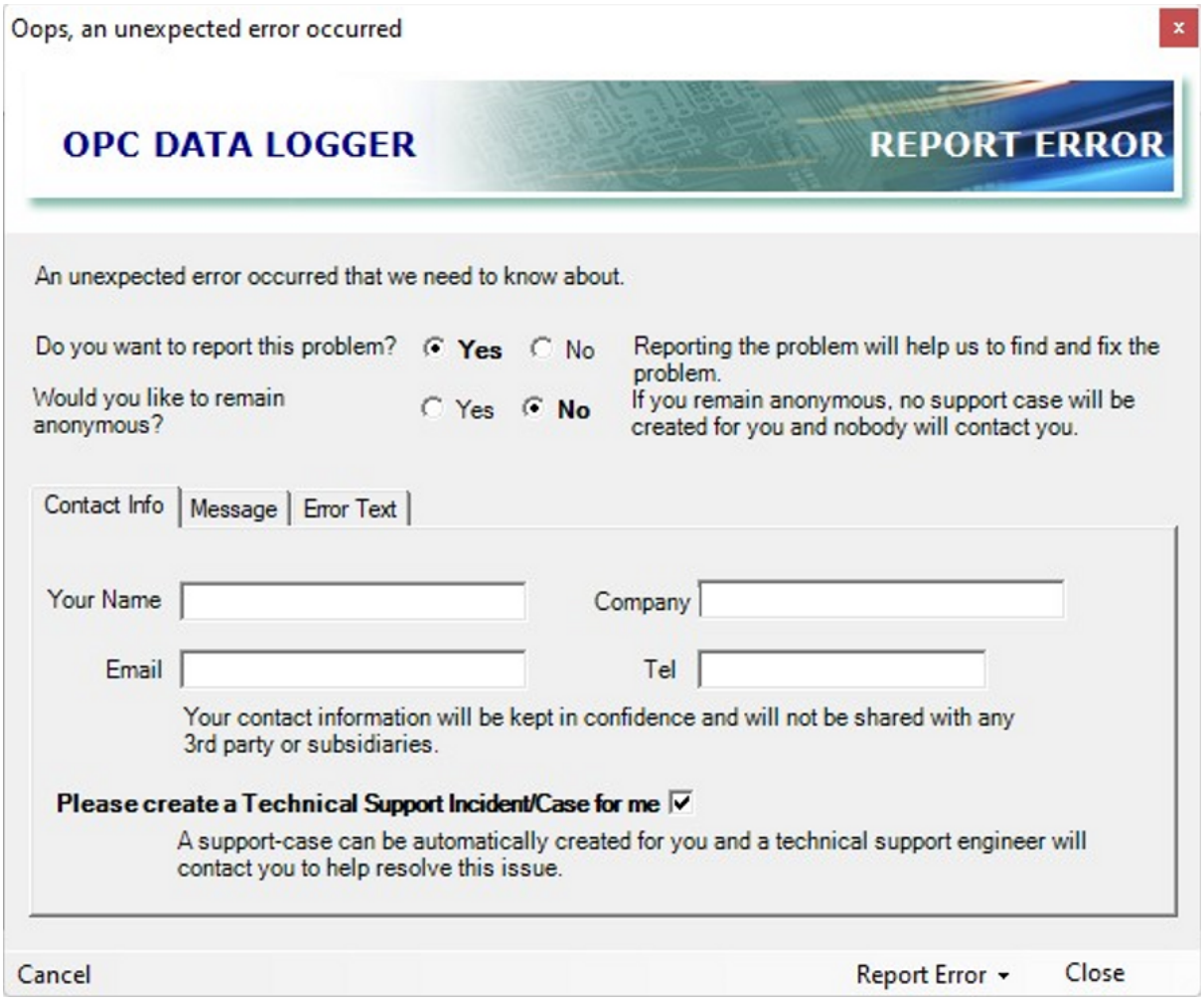

In the unlikely event that this does open, PLEASE use it to report the problem to us. You can log errors anonymously if you wish, likewise you can also specify if you want one of our developers to contact you personally regarding the problem you have encountered. This capability allows us to collect information regarding the error only. We do not collect any other information about your computer system or even your configuration.

PLEASE ALLOW AND USE THIS WINDOW TO SEND US THE ERROR REPORT.

If your computer is not connected to the internet, then click on the Message tab where you can then copy/paste the text into a text file which can then be later emailed to us.

Additional Information

This help documentation provides a number of articles for known problems:

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- Errors
- DCOM
- Data Storage Problems

7.7 Technical Support

If you need technical support, please contact your vendor:

Software Toolbox, Inc.

148 A East Charles Street, Matthews, North Carolina, 28105, USA.

Tel: +1 (704) 849-2773

Fax: +1 (704) 849-6388

Support Hours: 8 AM to 5 PM Eastern Standard Time (GMT-5) Monday to Friday

Online Support:

http://support.softwaretoolbox.com/

Email Support:

support@softwaretoolbox.com

Sales Support:

sales@softwaretoolbox.com

7.8 Specifications

Hardware Requirements

	Minimum Requirements	Recommended Requirements
CPU Speed	P3 - 600 Mhz	P4 - 2GHz
Memory	O/S + 128 Mb	2 Gb
Hard Disk Space	100 Mb	10 Gb

Note: If your CPU supports Hyperthreading or your have a Dual-Core Processor (i.e. Intel Core2Duo, Centrino Duo, etc) and you are running

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XP SP2, 2003, or Vista, OPC DataLogger does see a performance benefit from these technologies and you can significantly increase your performance results.

Software Requirements

Operating System	• Windows 7 • Windows 10 • Windows 11 • Server 2016 • Server 2019 • Server 2022
.NET Framework	.NET Framework 4.6

Supported Databases

Database Engine	Versions
Microsoft SQL Server	2005 and later (including Express editions)
Microsoft Access	2000 and later
MySQL	4.1 and later

OPC

Supported Interfaces

- OPC DA 2.05
- OPC UA

Note: OPC Data Access version 3.0 OPC Servers usually include OPC DA 2.05 interfaces which may be used with the OPC Data Logger software.

7.8.1 Performance

There is no single formula that can be applied to specify the kind of performance you can expect from the OPC Data Logger software. This is

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because there are many variables that influence the amount of throughput the OPC Data Logger software can expect to sustain, such as:

- **OPC**
  - How fast the OPC Server can supply the data
  - If the OPC Server is local or remote
  - How many OPC Servers you are connecting to
  - How the data is being read, i.e. Subscription versus Timed-reads
  - How many items you are reading/acquiring
  - How frequently those items are changing or being read
- **Computer**
  - Speed of the CPU
  - How much memory is available
  - Speed of your hard disks and controller, available disk space, and location of your Operating systems paging file relative to the location of the O/S itself.
  - Operating System
  - What other processes may be running
- **Database**
  - Location of the database, i.e. local versus remote
  - Database engine, i.e. Microsoft Access is significantly slower than Microsoft SQL Server
  - How the data is being injected into the database, i.e. Stored Procedures are faster than direct SQL injection
- **Networks**
  - Speed of the network card
  - Available bandwidth on the network

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Glossary

8 Glossary

- Data Collector: an interface to some kind of server or device where will collect our data from.
- Data Store: where to log data to, such as a text file or database.
- Group: a place-holder for the list of items to read, how to read them along with any triggers.
- Item: an item/Tag to log.
- msec/millisecond: 1/1000th of a second.
- OPC: A standard interface for sharing industrial data between applications.
- Logging Task: associates Groups of items to a Data Collector, with all the Data Stores it should log data to.
- Data Presentation: Format of the data displayed

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