DataLogger Server Plug-in Help

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Help version 1.038

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Overview

DataLogger is an application that logs data from an OPC server to any ODBC-compliant database. DataLogger's tight integration with the OPC server provides substantial, unique benefits such as simple installation, high-efficiency performance and easy browsing of tags in the OPC browse space.

Feature Highlights

- Support for any ODBC-compliant database management system.
- User-friendly installation and configuration. If a Database Source (DSN) is defined prior to launching DataLogger, users can have an active logging configuration in fewer than ten mouse clicks.
- Drag and drop support for adding OPC data items.
- Support for dynamically created tags.
- Flexible triggering. Data logging can be enabled at absolute times or when an expression is true (such as, when Tag X's quality=bad). When enabled, logging can be triggered based on data change and/or static/time interval and/or transition from a start condition to a stop condition.
- An OPC server Simulator driver is included.
- Two-hour demo for evaluation.

Runtime Performance Features

- Runs as a System Service.
- Scalability through support of multiple concurrent logging processes (threads).
- Supports both automatic table creation and the ability to append data to an existing table.
- Data is logged directly from the local item list, no reliance on external OPC servers.

- Error recovery: Auto reconnect if a DSN connection is lost.
- Optional automatic configuration backup (most recent copy of configuration file is saved).
- _System Tags allow for optional runtime control from OPC client applications; Enable/Disable logging as well as monitor logging status.

Initial Setup Considerations

The following topics should be reviewed before the first DataLogger Configuration is created.

System Requirements
SQL Authentication
Narrow vs Wide Table Format

System Requirements

Software Requirements

The following Microsoft Windows operating systems are supported:

- Windows Server 2008*
- Windows Vista Business/Ultimate*
- Windows Server 2003 SP2*
- Windows XP SP2*
- Windows 2000 SP4

*When installed on a 64 bit operating system, the application will run in a subsystem of Windows called WOW64 (Windows-on-Windows 64 bit). WOW64 is included on all 64 bit versions of Windows and is designed to make differences between the operating systems transparent to the user.

DBMS & ODBC Drivers

DataLogger supports the following ODBC drivers. The ODBC driver for the Database Management System being used must be installed on the PC that is running the OPC server.

- SQL Native Client (necessary for SQL Server 2005).
- SQL Server ODBC Driver (compatible with pre-SQL Server 2005).
- MyODBC driver 3.51 (for MySQL).
- Microsoft Access 4.0 ODBC Driver.
- Linked Excel table support provided through the Microsoft Access 4.0 ODBC Driver.

Note 1: Although DataLogger supplies TimeStamp values with a resolution to 1 thousandth of a second, certain databases are not capable of displaying a Date Format to the resolution of below 1 second.

Note 2: Some databases do not support millisecond resolution. For more information on a specific database, refer to the product's vendor.

Hardware Requirements

The following hardware is required at a minimum:

- 2.0 GHz Processor
- 1 GB installed RAM
- 180 MB available disk space
- Ethernet Card.

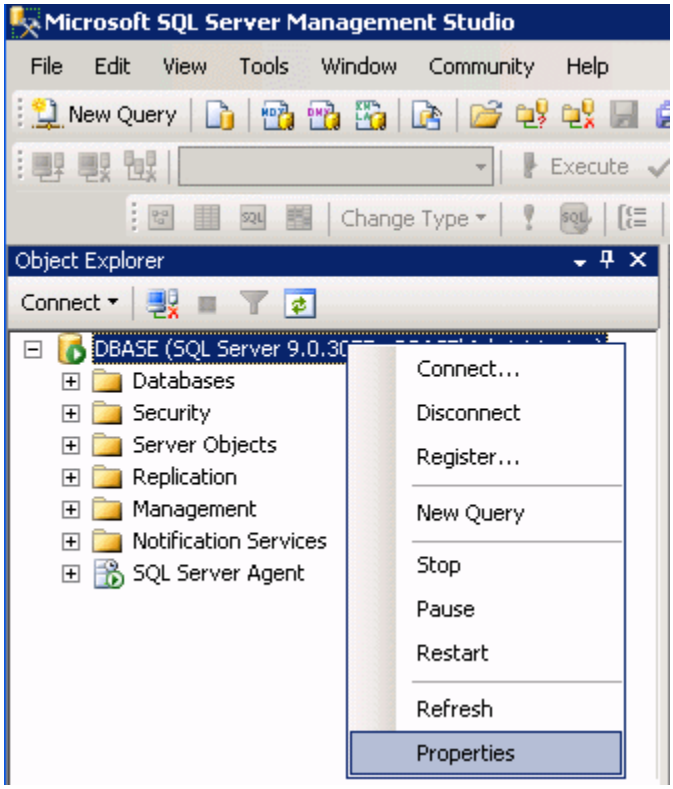
SQL Authentication

Click on the links below in order to jump to that section in the SQL Authentication setup.

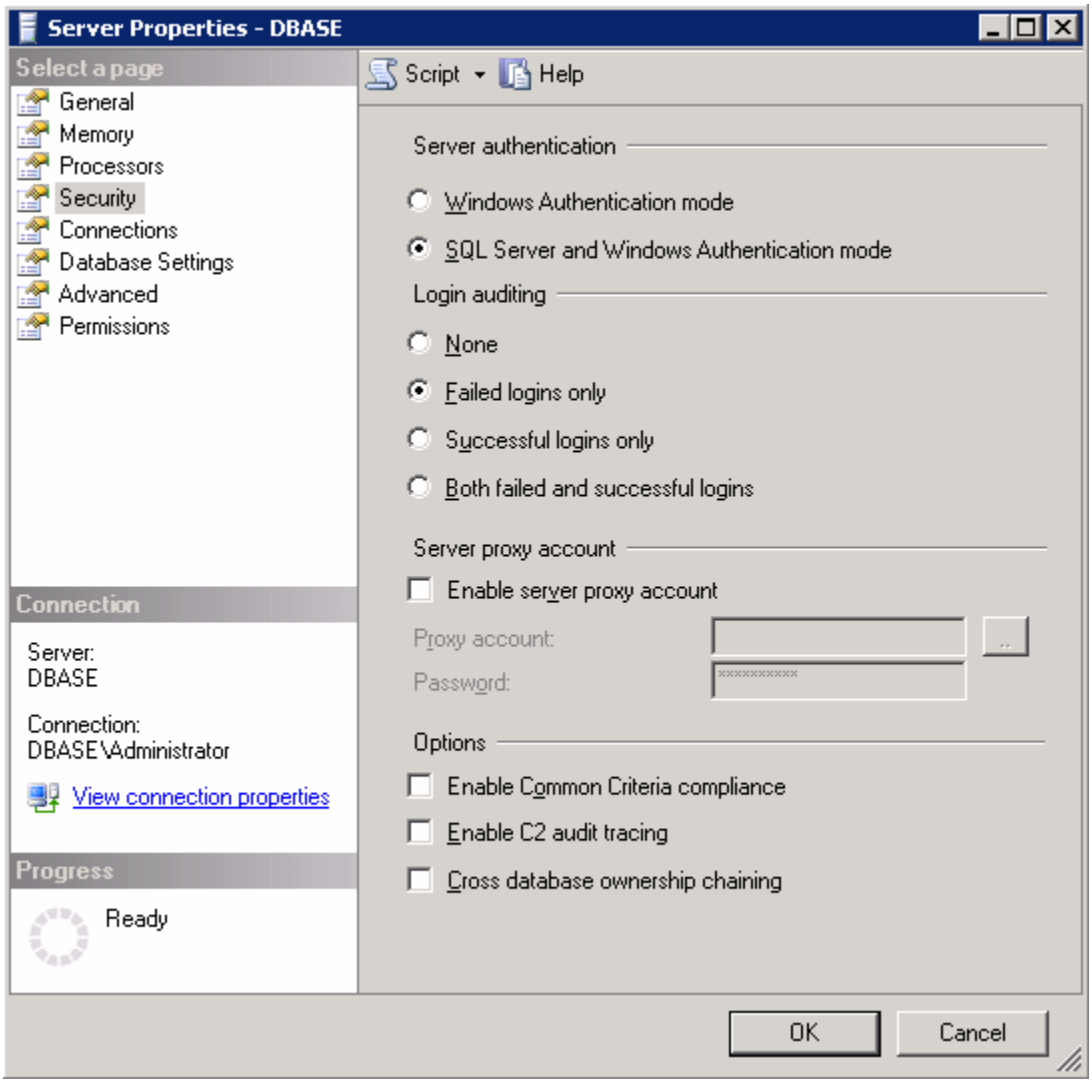
Setting up SQL Authentication

The following instructions contain information on setting up an SQL authentication. This process usually only has to be done when the application is running as a System Service and is attempting to connect remotely to SQL server.

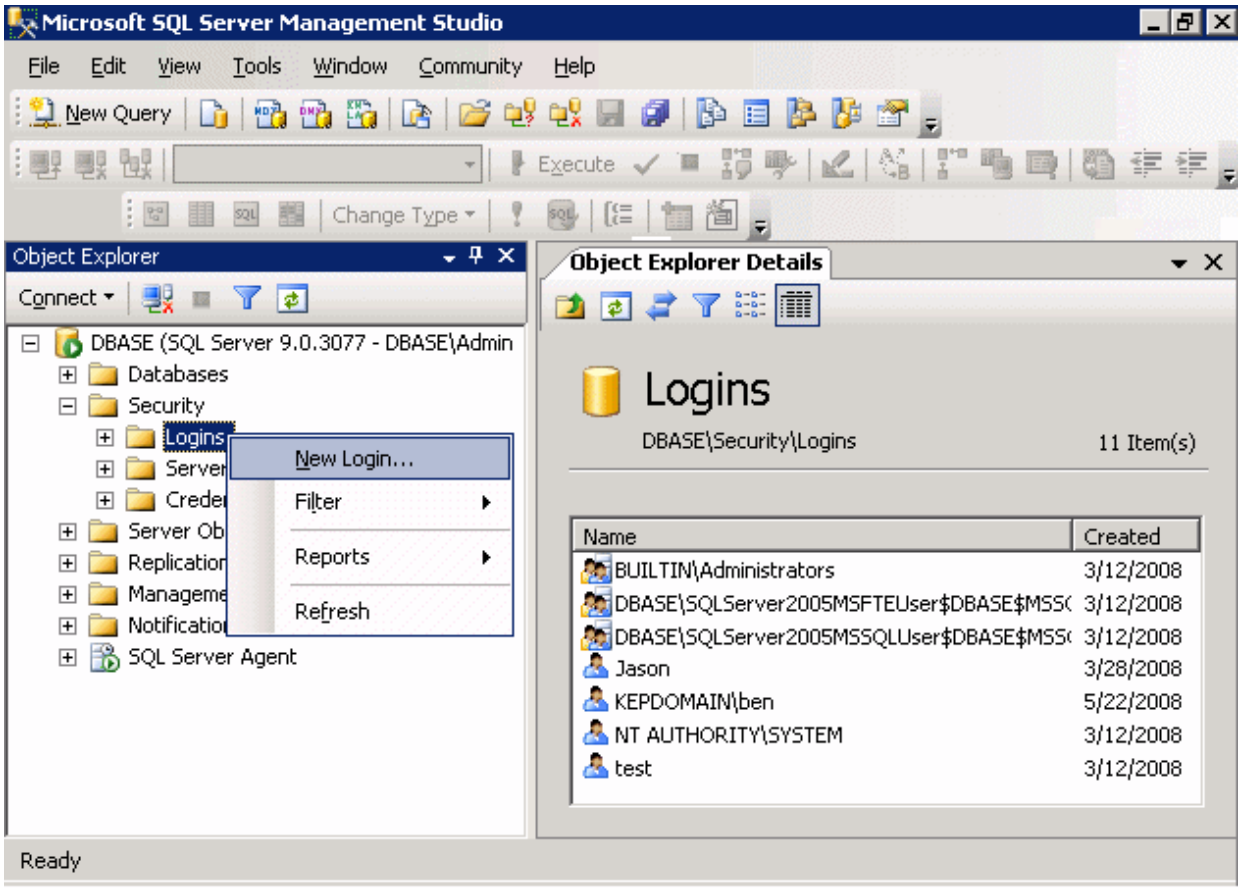
1. In the **SQL manager**, right-click on the SQL server icon in the tree. Open the SQL Server properties.



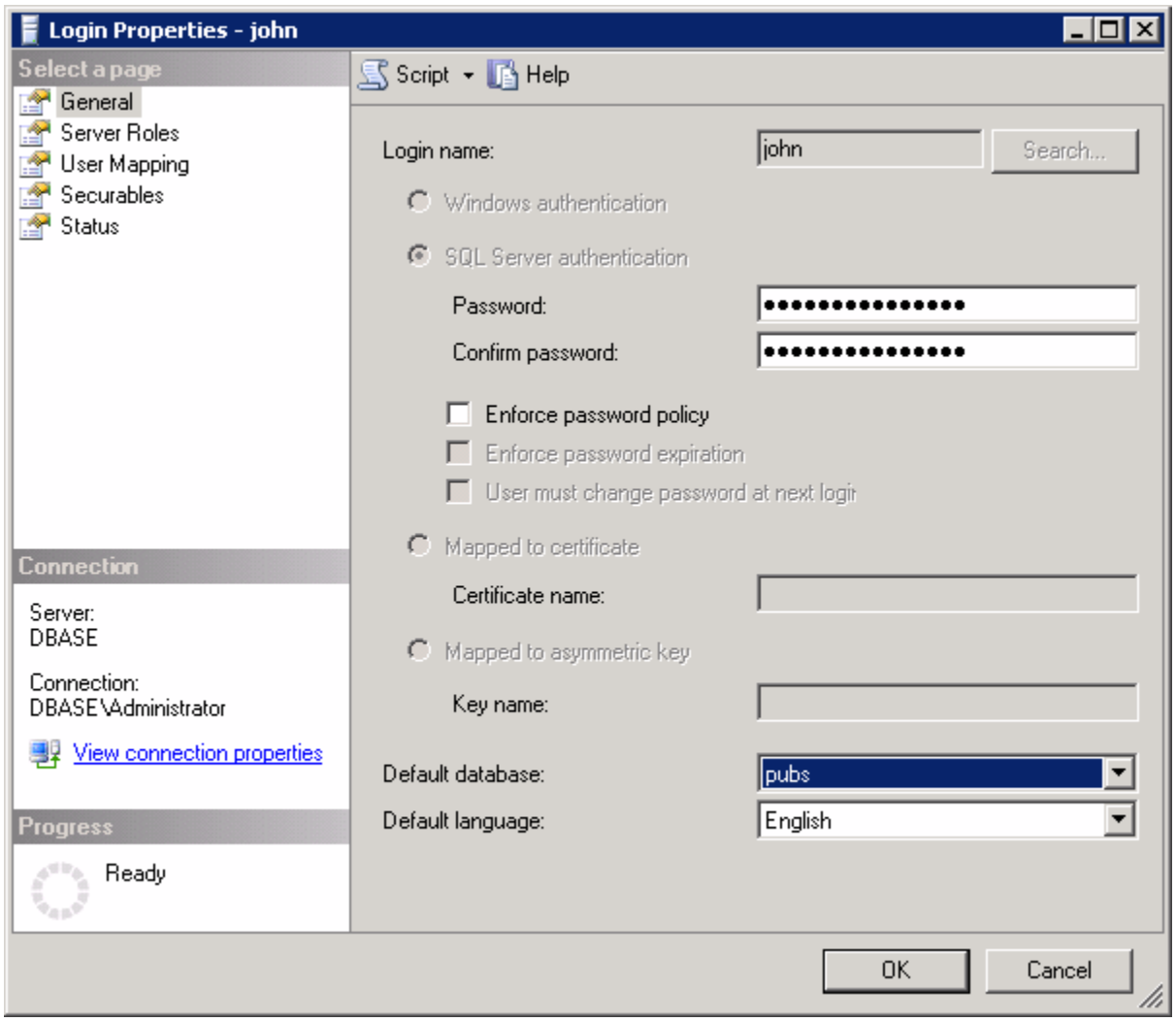
2. Select the **Security** page and choose the mixed authentication mode (**SQL Server and Windows Authentication mode** radio button).



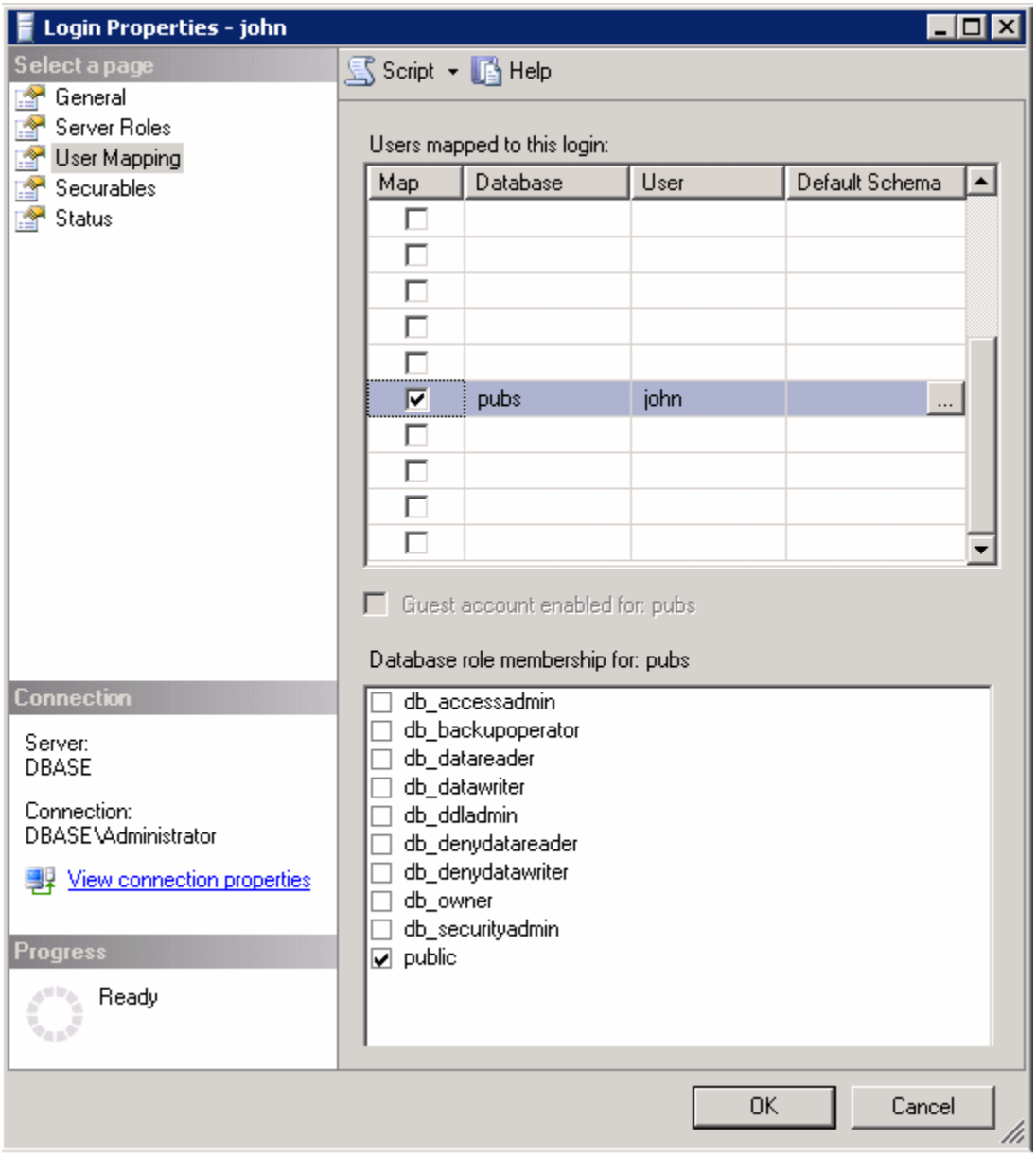
3. Proceed to the tree menu and right-click on the security folder. Click **Logins** | **New user**.
4. Create and define a user's privileges.



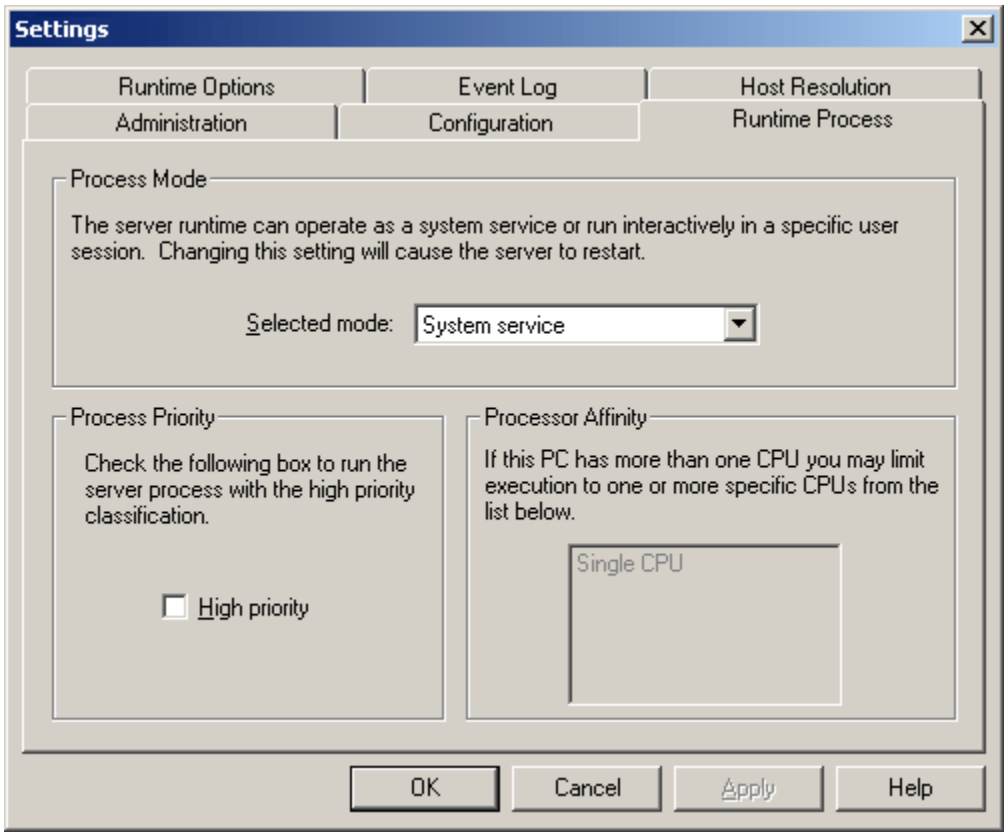
5. Under the **General** page, a user name and password must be defined.



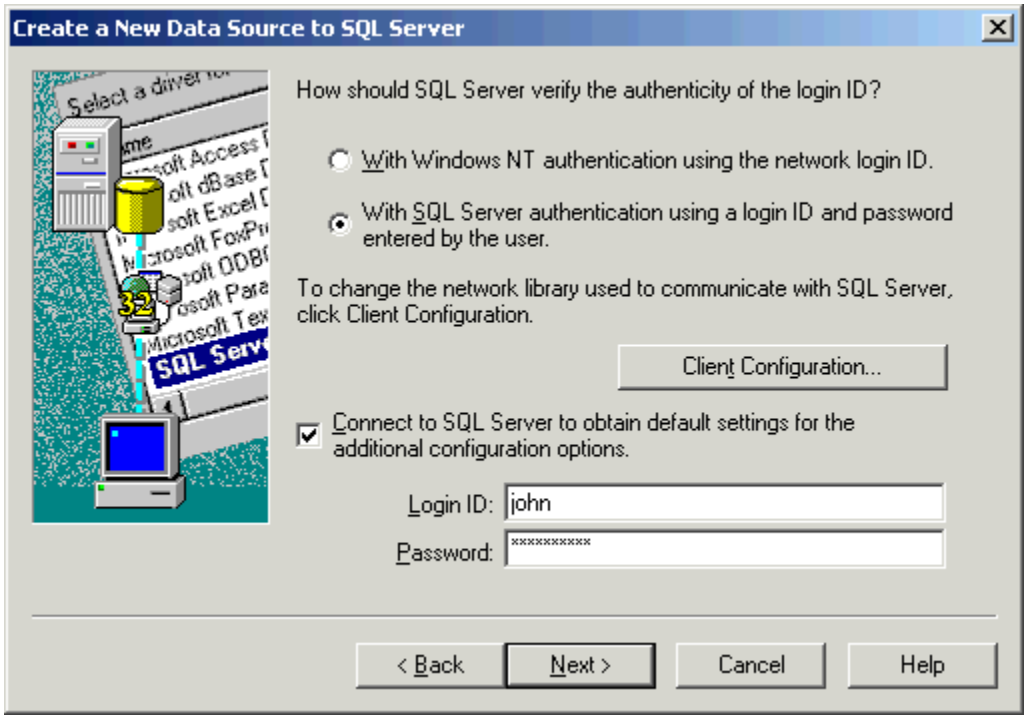
6. Next, click on the **User Mapping** tab and select the database to which the user will connect. Then select a role for the database that has been selected. In this example, **Public** is used.



7. Start the OPC server and select **Tools** | **Options**.
8. Next, click **Runtime Process**. In **Selected Mode**, select **System Service**.
9. Click **OK**.



10. When the DSN is configured, users will go through a series of DSN setup dialogs. When the **Create a New Data Source to SQL Server** dialog is displayed, be sure to check **With SQL Server authentication using...** and **Connect to SQL Server to obtain...** and then enter the Login ID and password for the user that have been defined in the SQL Server.



Running as a System Service

Normally, an OPC server that only supports stand alone program operation is forced to shut down when its host machine experiences a user login or logout. This server, however, can continue to supply OPC data across user login sessions by running as a System Service. The ability to run as a System Service is crucial for many applications where the server must provide data to OPC clients via DCOM. For these applications, the loss of a DCOM connection cannot be tolerated.

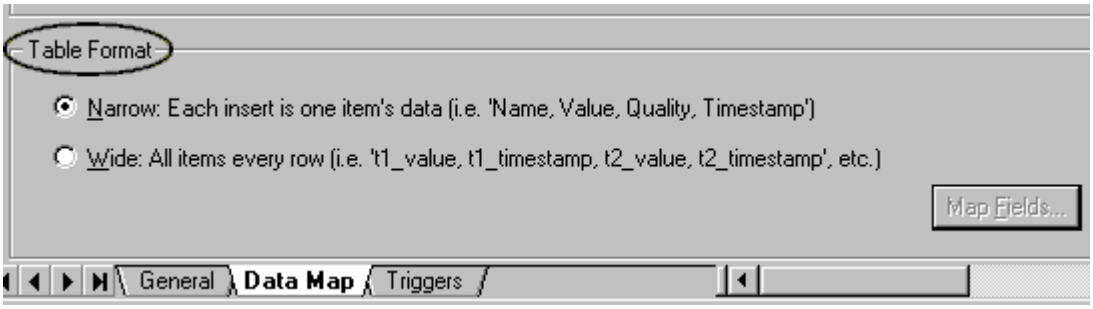
Note: For more information on running as a System Service, refer to the OPC Server's help documentation.

Connecting Remotely as a System Service

This ODBC communications application supports running as a service under supported Microsoft Windows operating systems. For operating system (OS) requirements, refer to the OPC Server's help documentation.

Narrow vs. Wide Table Format

DataLogger can map fields in either the **Narrow Format** or **Wide Format**. Users must specify which format will be used for each database table that is logged into. The setting is reached through the **Data Map Tab**.



Narrow and Wide Format Examples

The following example shows the narrow and wide formats, with three server items that need to be logged.

- Ch_1.Dev_1.Temp
- Ch_1.Dev_1.Pos
- Ch_1.Dev_1.Speed

Narrow Format Examples

The two tables below show the three server items being logged using the Narrow Format. All three server items have been logged into four columns. The table below shows the narrow format with a static time interval (meaning every *x* seconds or minutes).*

Narrow Format with Data Logged on Static Interval

Name	Value	Quality	Time
Ch_1.Dev_1.Temp	38	192	2007 02 16 13:44:26.832
Ch_1.Dev_1.Pos	22	192	2007 02 16 13:44:26.832
Ch_1.Dev_1.Speed	103	192	2007 02 16 13:44:26.832

In the table below, the same three server items are being logged using the narrow format; however, data is logged on data change. In this example, Ch_1.Dev_1.Temp has changed value, so it is the only row that is logged.

Narrow Format with Data Logged on Data Change*

Name	Value	Quality	Time
Ch_1.Dev_1.Temp	38	192	2007 02 16 13:38:02.142

*There was a temperature change (item 1). The other two items did not change.

Wide Format Example

The next example demonstrates Wide Format. When wide format is selected, three columns are logged for each server item. The three columns are: _VALUE, _TIMESTAMP and _QUALITY.

In our example, there are three server items: Ch_1.Dev_1.Temp, Ch_1.Dev_1.Pos, and Ch_1.Dev_1.Speed. In wide format, this would result in nine columns (three columns for each server item), which would consist of the following:

Ch_1.Dev_1.Temp_VALUE
Ch_1.Dev_1.Temp_TIMESTAMP
Ch_1.Dev_1.Temp_QUALITY
Ch_1.Dev_1.Pos_VALUE
Ch_1.Dev_1.Pos_TIMESTAMP
Ch_1.Dev_1.Pos_QUALITY
Ch_1.Dev_1.Speed_VALUE
Ch_1.Dev_1.Speed_TIMESTAMP
Ch_1.Dev_1.Speed_QUALITY

Wide Format

Ch_1.Dev_1. Temp_VALUE	Ch_1.Dev_1. Temp_TIMESTAMP	Ch.1.Dev_1. Temp_QUALITY	Ch_1.Dev_1.Pos
38	2007 02 16 13:44:26.832	192	22

Note: Only a portion is shown due to the width of the sample table (9 columns).

With the wide format, all fields are logged each time data is logged. In our example, nine columns would be logged every time DataLogger inserted data into the database table. If data was being logged on a static interval, nine columns would be logged every *x* milliseconds. If data was being logged on data change, nine columns would be logged every time any of the fields had a data change.

Note: For more information on the options available to log data on static intervals, data change, or on transition from a start condition to a stop condition, refer to **Add/Modify Trigger - General Properties**.

Setting Up a DataLogger Configuration

A DataLogger configuration defines how data will be extracted from an OPC server project and logged into a database. There is one DataLogger configuration for each OPC server project. Within a DataLogger configuration there are one or more log groups. A **log group** is a "data pipeline" between the OPC server project and a database table. A log group defines the following:

- A DSN connection to the database
- The server items (OPC server tags, etc.) that will be logged to the database
- The format and name of the table within the database
- The trigger(s) that govern when data will be logged (at a specific time, on data change, etc.)

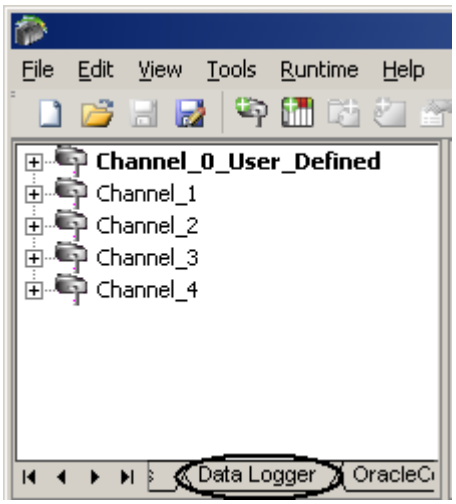
Note: Click on the links below in order to jump to that section in the DataLogger Configuration setup.

DataLogger Configuration: A Walk-Through

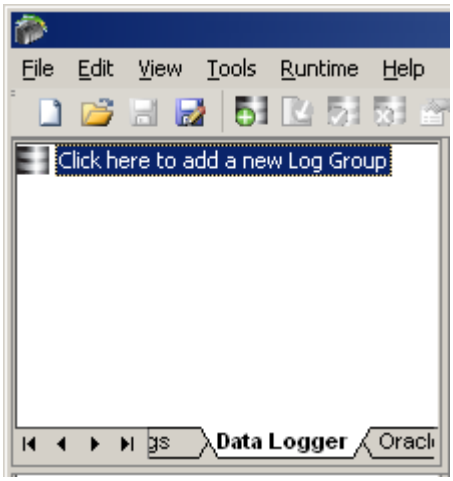
The following steps provide a walk-through for setting up a DataLogger configuration.

1. Start the OPC server and then open the OPC project.

2. Launch **DataLogger** by clicking **Tools** | **DataLogger Configuration**. Alternatively, click the DataLogger icon  .



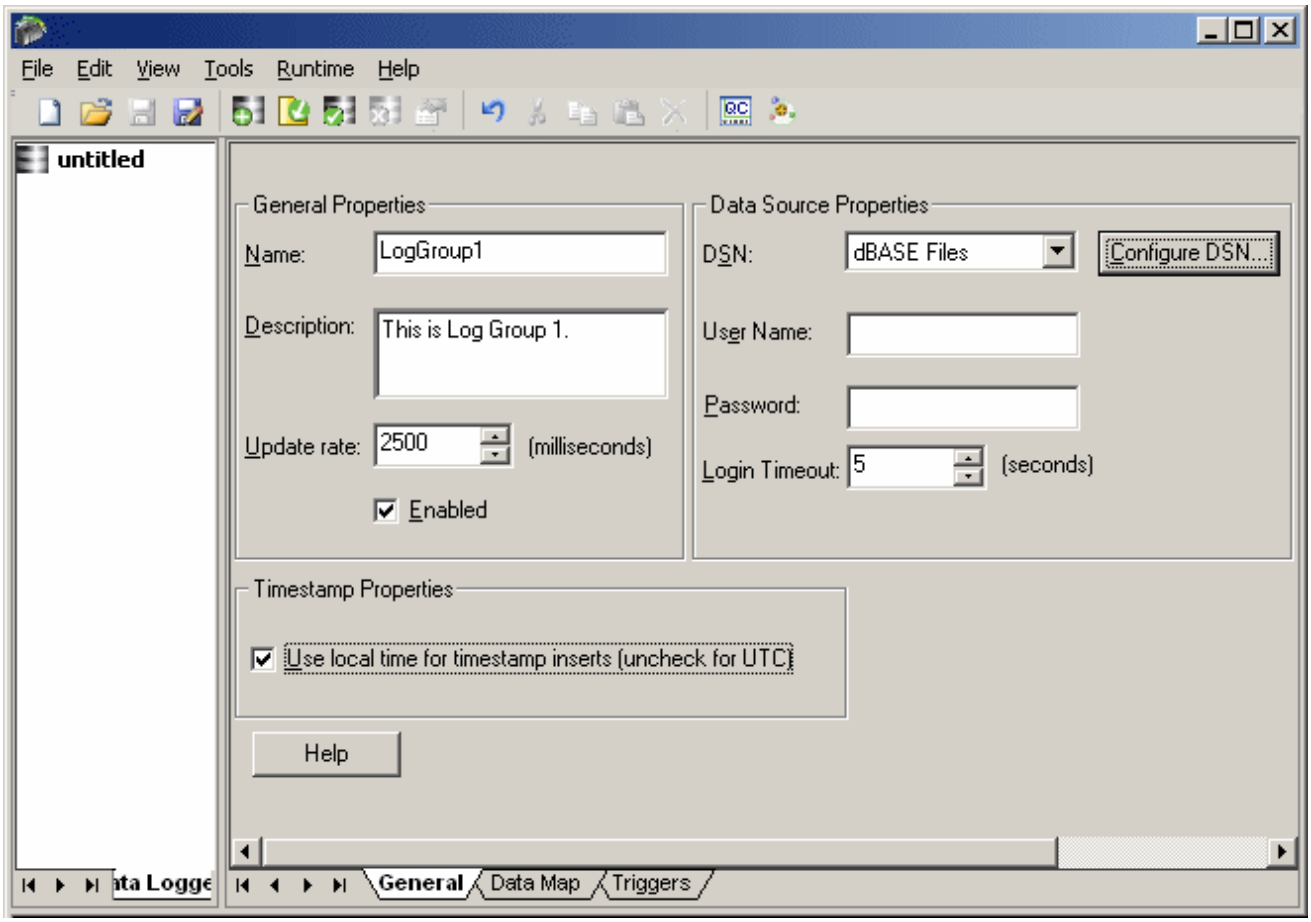
3. If this is the first time a DataLogger configuration has been created for the server project, the following screen will be displayed. To begin, click on "Click here to add a new Log Group."



Note: The main DataLogger window has three tabs: **General Tab**, **Data Map Tab** and **Triggers Tab**.

General Tab

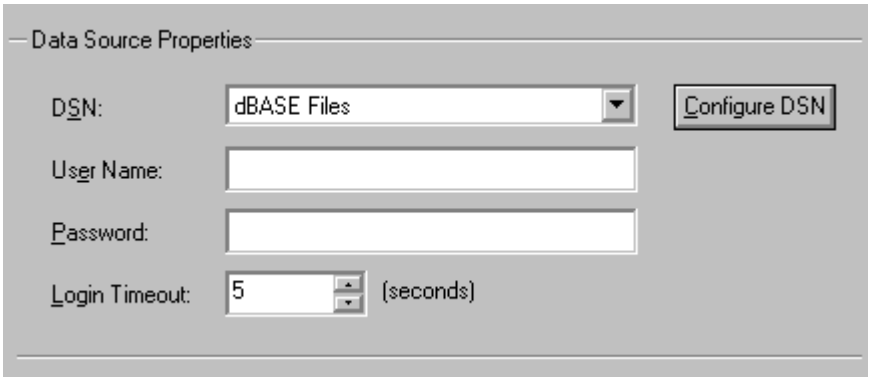
1. When the main DataLogger screen is first displayed, the left pane will display one log group with the default name "Untitled," and the right will display the General tab.



2. Complete the fields under **General Properties**.

Field	Description
Name	Enter a name for the log group being created. The maximum length is 256 characters. It cannot include a period or double quote, and also cannot begin with an underscore.
Description	Enter a longer, descriptive name. Maximum length is 4096 characters.
Update Rate	This field controls the update rate (in milliseconds) for data coming from the OPC server to the log group. The possible range is 10 to 99,999 milliseconds. For more information, refer to **Add/Modify Trigger - General Properties**.
Enabled	By default, this field is checked. When checked, the DataLogger configuration is enabled.

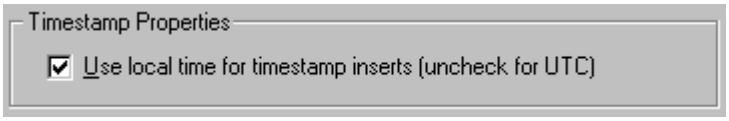
3. Next, configure a **DSN connection** to the database.



Field	Description
DSN	Choose the DSN for the database from the **DSN** drop-down list. If the DSN is not listed, it must be configured. Click the **Configure DSN** button and refer to **Data Source Setup** . Once a DSN has been configured, it will then be displayed as a choice in the **DSN** drop-down list.
User Name	The **User Name** and **Password** settings are required only if your data source requires it. **Note:** Some data sources allow you to use Windows NT Authentication to gain access to the data source. If your data source is set up to use Windows NT Authentication, the data source will ignore the User Name and Password under the data source settings page and will use the network Login ID. **See Also:** **SQL Authentication**.
Password	
Login Timeout	This setting defines how long, in seconds, the server will wait for a response when attempting to connect to the DSN. At the end of that time, the connection attempt will time-out. The default is 5 seconds. The possible range is 1 to 99999 seconds.

Timestamp Properties

The last setting located at the bottom of the General tab is Timestamp Properties. Click **Use local time for timestamp inserts (uncheck for UTC)** to have DataLogger use the local time in timestamp values. In order to set the timestamp values in UTC (Universal Time Coordinated), this checkbox should be unchecked.



Click on the **Data Map** tab to continue.

Data Map Tab

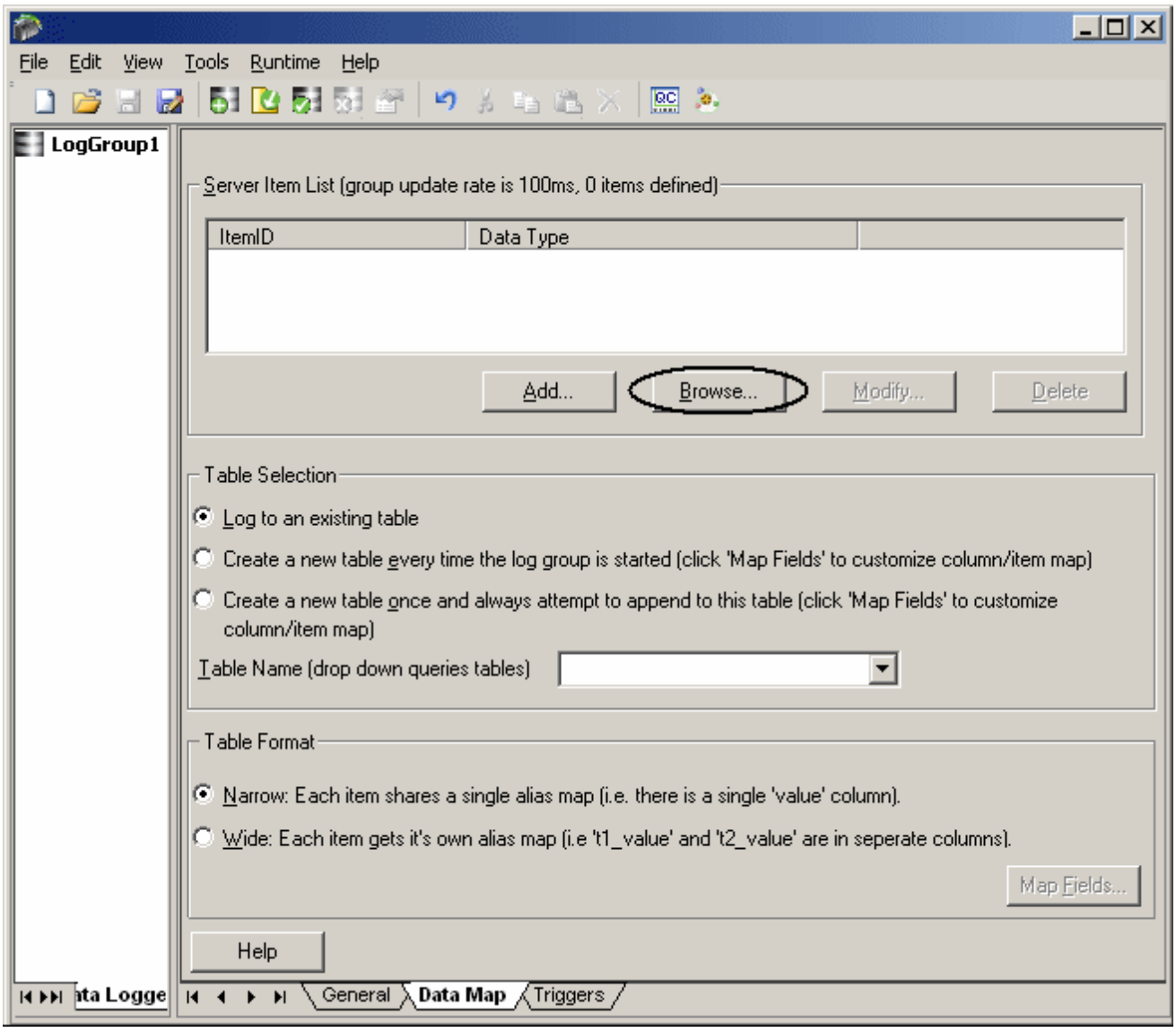
Choosing Server Items

The next step is to choose the server items to be logged to the database.

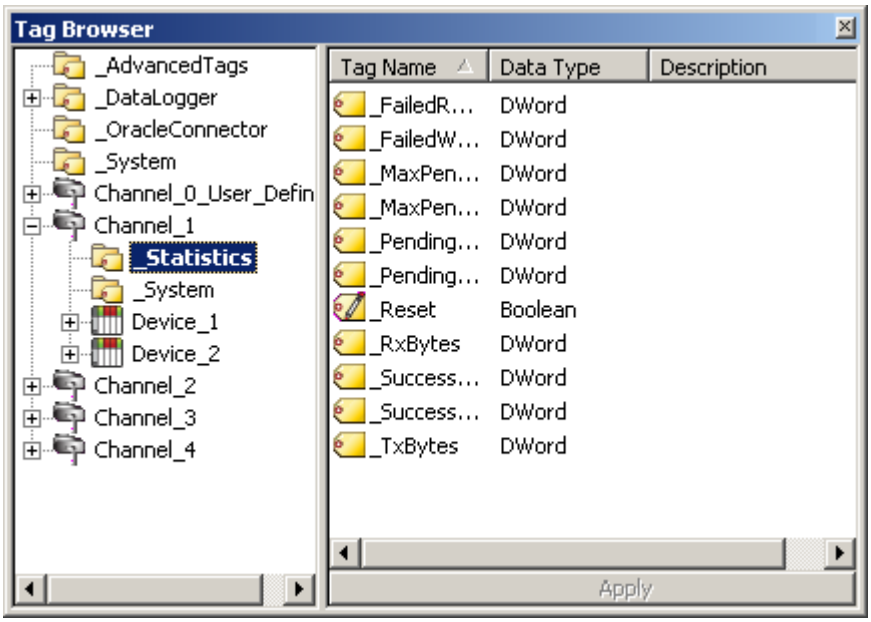
1. Click the **Data Map** tab. The **Server Item List** window will be blank when it is first displayed.

2. To add an item, click the **Browse** button.

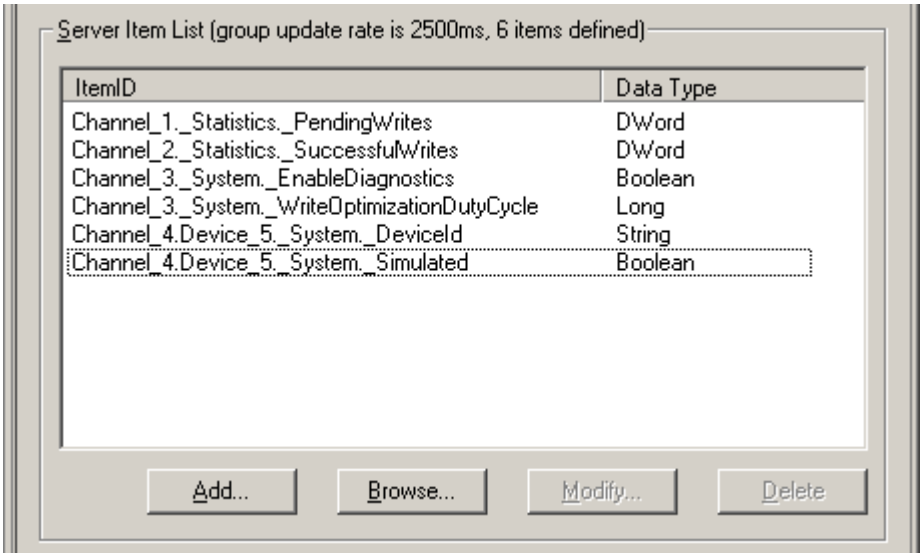
Note: To add a dynamically created tag as a server item, click **Add**.



3. Navigate through the OPC server project to the server item(s) that will be logged. To select multiple items, use CTRL-click or SHIFT-click. After the selections have been made, click **OK**.



4. Repeat the previous steps to add more server items. As server items are chosen to log, they will be added to the **Server Item List**.

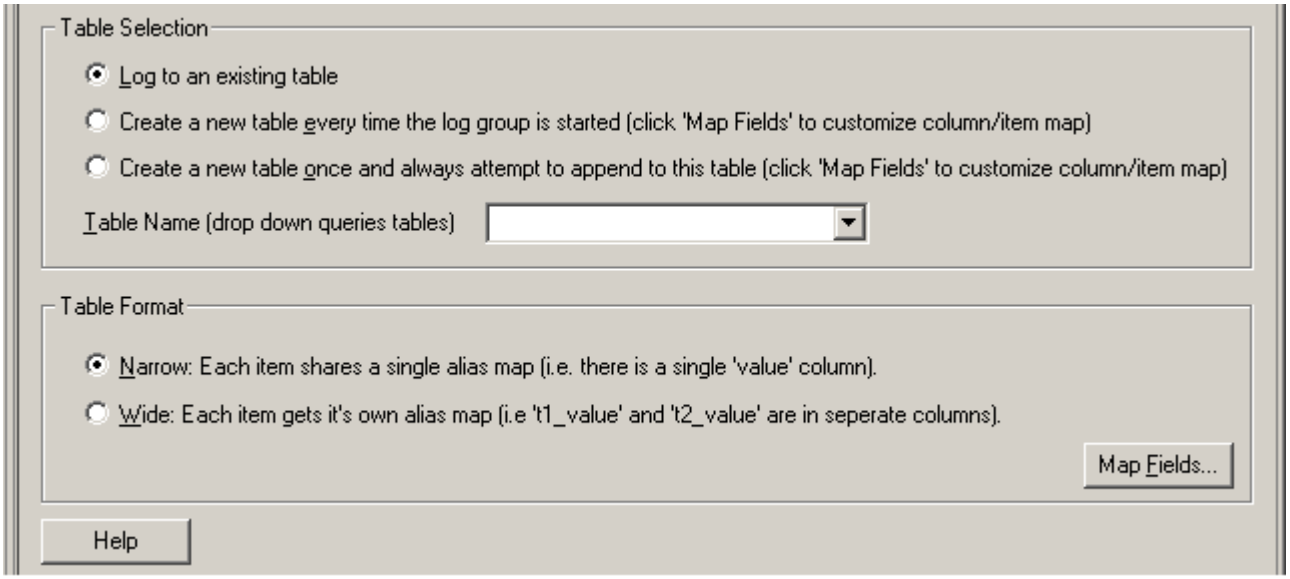


5. To add a dynamically created tag as a server item, click **Add**.

6. To modify a server item in the Server Item List, click **Modify**.

7. Next, choose the database table.

Defining the Database Table



1. Choose an option under Table Selection.

Parameter	Description
Log to an existing table	Select this option to log data to an existing table. Use the **Table Name** drop-down list to choose the table to use, then click the **Map Fields** button. **See Also:** **Map Item Fields**.
Create a new table every time the log group is enabled	Select this option to generate a new table in the database each time the OPC server enters runtime. Type a name for the table in the **Table Name** field. The first time this log group is enabled, the table will be created. The next time the log group is enabled, another table will be created with the name **tablename0**. For example, if you type "Baseline" in the **Table Name** field, a table named Baseline will be created the first time the log group is enabled. The next time the log group is enabled, a table named Baseline0 will be created, then Baseline1, Baseline2, and so on. To customize the mapping of server items to database columns, click **Map Fields**. **See Also:** **Map Item Fields**.
Create a new table once and always attempt to append to this table	Select this option to generate a new table in the database the first time this log group is enabled. Data will be logged to that same table each time the OPC server enters runtime thereafter. Type a name for the table in the Table Name field. The first time this log group is enabled, the table will be created. The next time the log group is enabled and every subsequent time, the data will be appended to that same table. If you want to customize the mapping of server items to database columns, click the **Map Fields** button. **See Also:** **Map Item Fields**.
Note: These settings can be switched at any time during the life of the log group. The switch will take effect when the log group modifications are saved with the **Apply Changes button**. **Table Names:** When using DataLogger to create tables, please note that the maximum length of table names is 256 characters as imposed by DataLogger; however, in practice the maximum will depend upon the database being used and ODBC driver limits. Often the maximum will be 64 or 128 characters. Also note that table names should consist of letters and numbers only. Using non-alphanumeric characters can cause an error in the table creation. If non-alphanumeric characters must be used in the table name, consult with the database and ODBC driver specifications for table naming restrictions.	

2. Choose either **Narrow Format** or **Wide Format**. For a more detailed description of the narrow and wide formats, refer to **Narrow vs Wide Table Format**.

Format	Description
Narrow Format	Each row will include 4 columns: Name, Value, Quality and Time.
Wide Format	Each row will include Value, Time and Quality for every server item.

3. Click on the **Triggers** tab to continue.

Triggers Tab

A log group can have one or more triggers. Each trigger is defined by two major parameters: when and how.

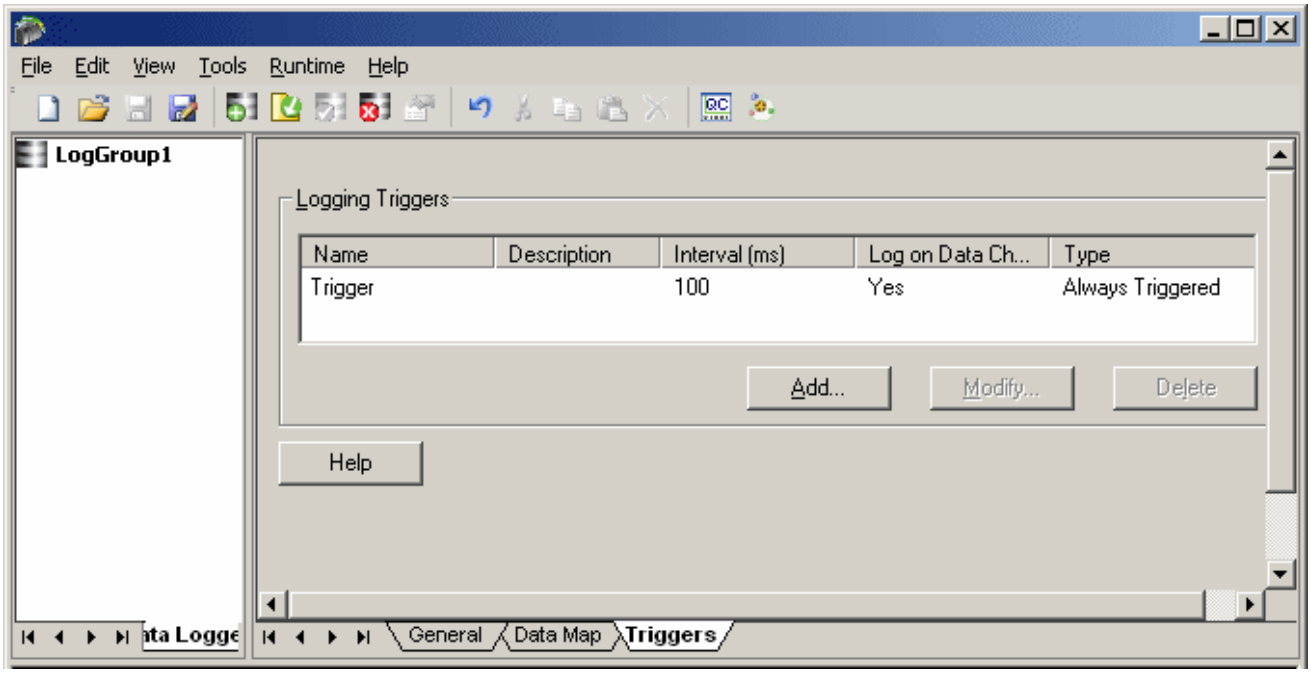
1. When will the trigger be true?
   - **Always triggered:** The trigger will always be true as long as the OPC server is in runtime. For example, the trigger will not have a false state, except for when the OPC server is inactive.
   - **Absolute:** The trigger will be true only for certain days and hours. For example, from Monday to Friday, 8 AM to 5 PM.
   - **Expression:** The trigger will be true when conditions in an expression are true. For example, a trigger can be defined to be true when the value of tag XYZ is greater than 100.

2. When the trigger is true, how will data be logged?
While a trigger is true, data will be logged (i.e., inserted into a database table) in one or more of the following ways.
   - **Log on Static Interval:** Data is logged at regular intervals; for example, every 500 ms.
   - **Log on Data Change:** Data is logged only when the value of server item changes (such as an item in the Server Item List on the **Data Map Tab**). For example, if the log group has 4 server items and the trigger is set to log on data change, then data will be logged only when there is a change in at least one of those 4 server items.
   - **Start Snapshot:** Data is logged whenever the trigger goes from false to true.
   - **Stop Snapshot:** Data is logged whenever the trigger goes from true to false.

Note: The format of the data being logged depends whether the narrow or wide format is chosen for the log group.
See Also: **Narrow vs Wide Table Format**.

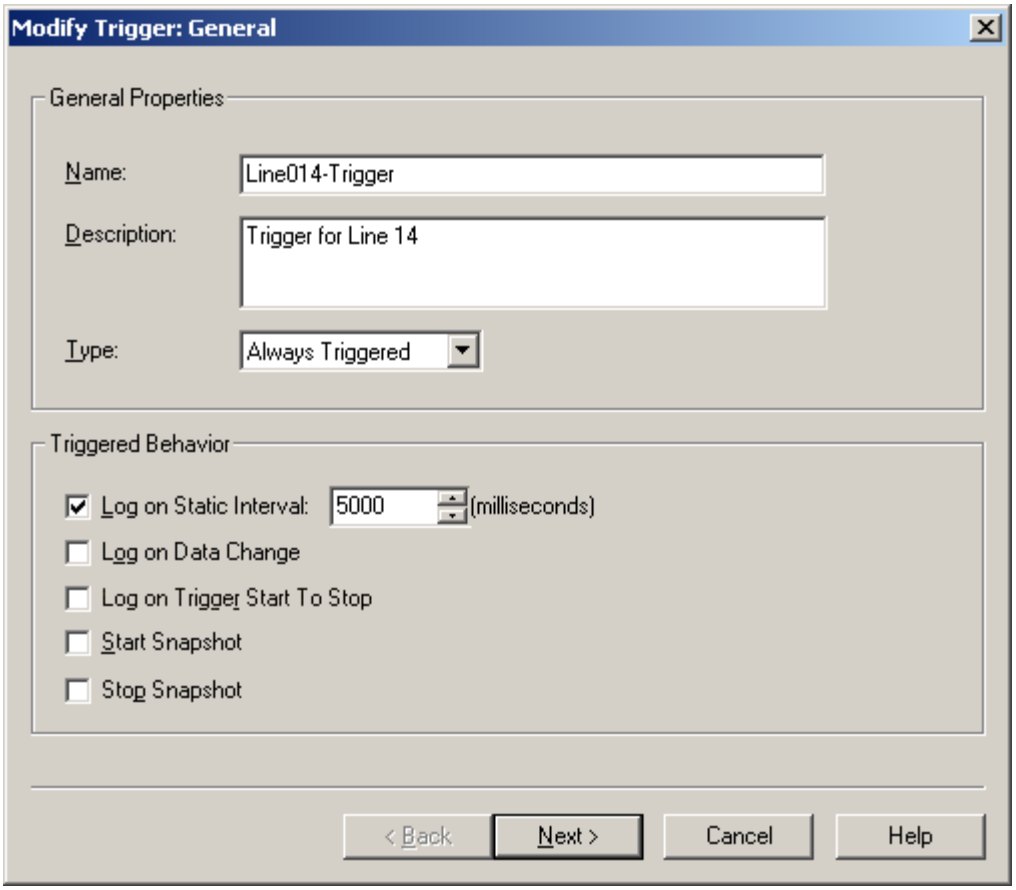
Defining a Trigger

When the Triggers tab is first displayed, the Logging Triggers will show one trigger, Default. In this example, one default trigger has already been created.



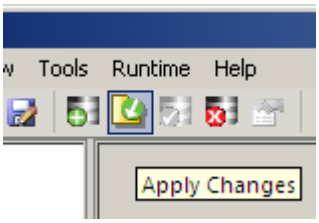
- To modify the default trigger, click **Modify**.
- To add another trigger, click **Add**. This will invoke the **Add Trigger: General** dialog.
- The Add and Modify dialogs are the first in a **series of dialogs** that will lead users through the trigger-definition process.

Note: Each trigger dialog has a **Help** button, which provides dialog-specific instructions and information.



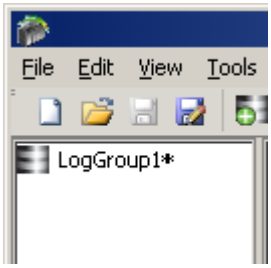
Saving Changes/Organizing Log Groups

When a log group has been defined, click the **Apply Changes** icon to save the log group. When a new log group is added (or when changes are made to an existing log group) the changes need to be applied. If this is not done, the system will prompt users to apply changes when exiting the configuration.



Left Pane

Log group(s) for the current configuration are displayed in the left pane. In the first example shown below, there is a new log group and it has not been saved yet, as indicated by the asterisk (*****).

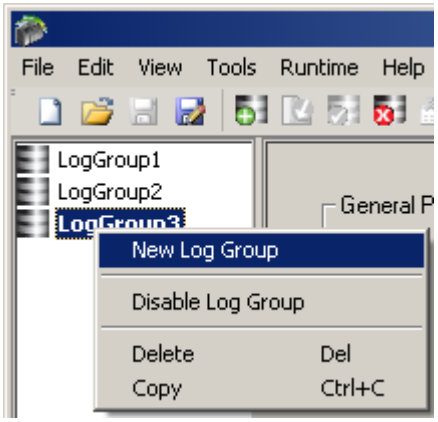


In the next example, there are three log groups in the configuration. The second one has been modified but not saved yet.

Adding, Copying and Removing Log Groups

There are three ways to add a new log group: right-click in the Log Group pane and select **Add Log Group**, click **Edit/Add Log Group Configuration** or click the **Add Log Group** icon  .

- To make a copy of an existing log group, right-click on the log group and select **Copy Log Group**.
- To remove (delete) a log group, right-click on the log group and select **Remove Log Group**.



DataLogger Dialogs

Click on a link below for more information on a particular DataLogger dialog.

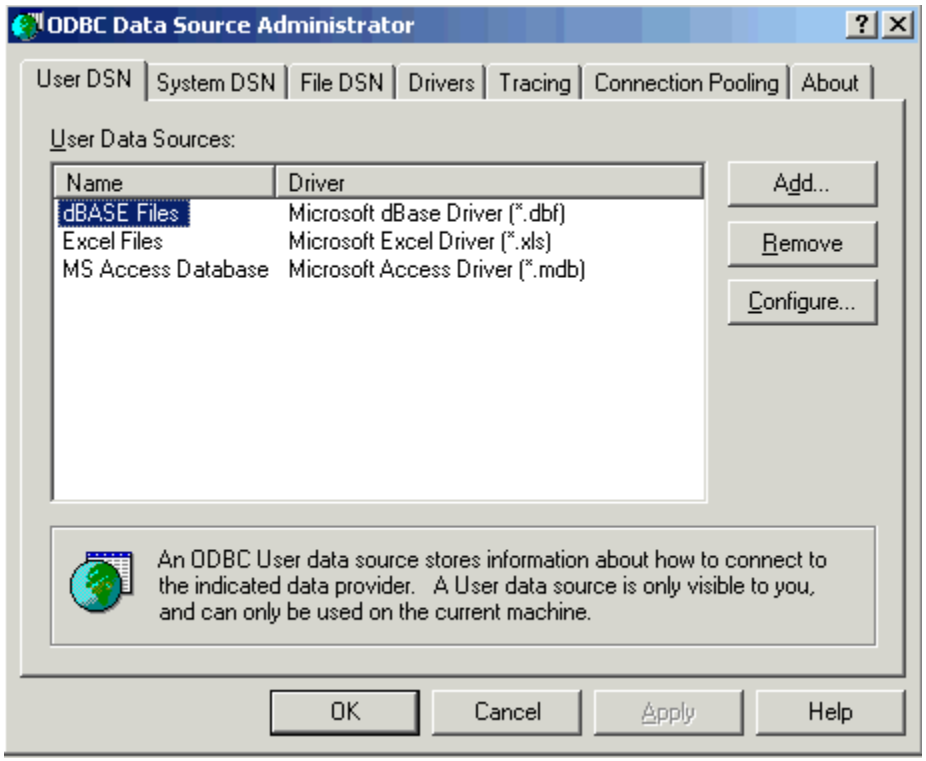
Setting Up a DSN
Add Server Item/Modify Server Item
Map Item Fields
Modify Column Definition
Add/Modify Trigger - General Properties
Trigger - Start/Stop Event Expression
Trigger - Absolute
Trigger - Summary

Setting Up a DSN

Before any DSN connection to a database can be used, it must be configured. After it has been configured, the DSN will be displayed in the drop-down list for the **DSN** field.

Note: The ODBC driver(s) for the Database Management System being used must be installed on the PC that is running the OPC server. For a list of supported ODBC drivers, refer to **System Requirements**.

1. On the **General Tab**, click **Configure DSN** in order to display the **ODBC Data Source Administrator** dialog.

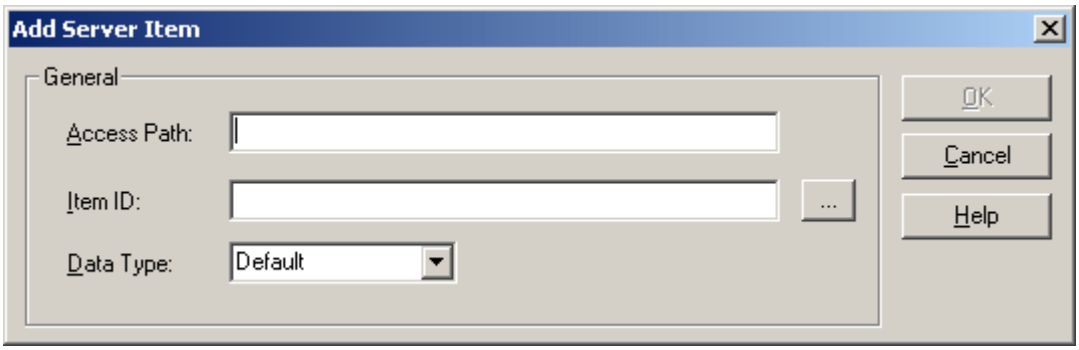


2. Choose either the **User DSN** tab or **System DSN** tab.

   Note: For further help with the ODBC Data Source Administrator dialog, click **Help**.

3. Next, click **Add**.
4. In the **Create New Data Source** dialog, scroll down the list of drivers to locate the driver for the specific database.
5. Select the driver and then click **Finish**.
6. Continue through the wizard and complete the dialogs that are displayed. The dialogs and fields will vary according to the database being connected.
7. The final dialog of the DSN Wizard may include a **Test** button for the Data Source. Whether or not a **Test** button is displayed depends upon the DSN being configured. If so, click the button to verify that the DSN setup is functional.

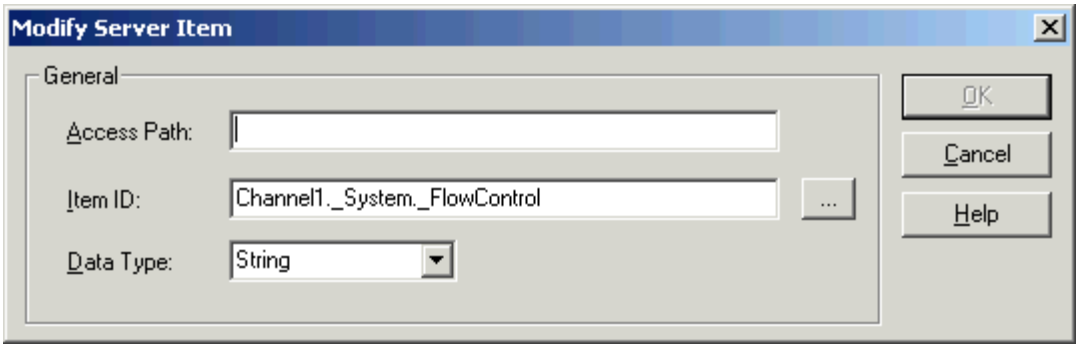
Add Server Item/Modify Server Item



Access Path: If the item will be accessed by a nonstandard OPC address, enter the access path here. This is optional.

Item ID: This parameter specifies the full name of the server item. Use the Browse (...) button to search the OPC server project for an item. In order to add a server item dynamically, enter the full name. If an existing server item was chosen and **Modify** was selected, the Item ID field will display the ID of the server item being modified. The maximum length of the **Item ID** field is 256 characters.

Data Type: This parameter specifies the item's data type. The data type can be chosen from the drop-down list.

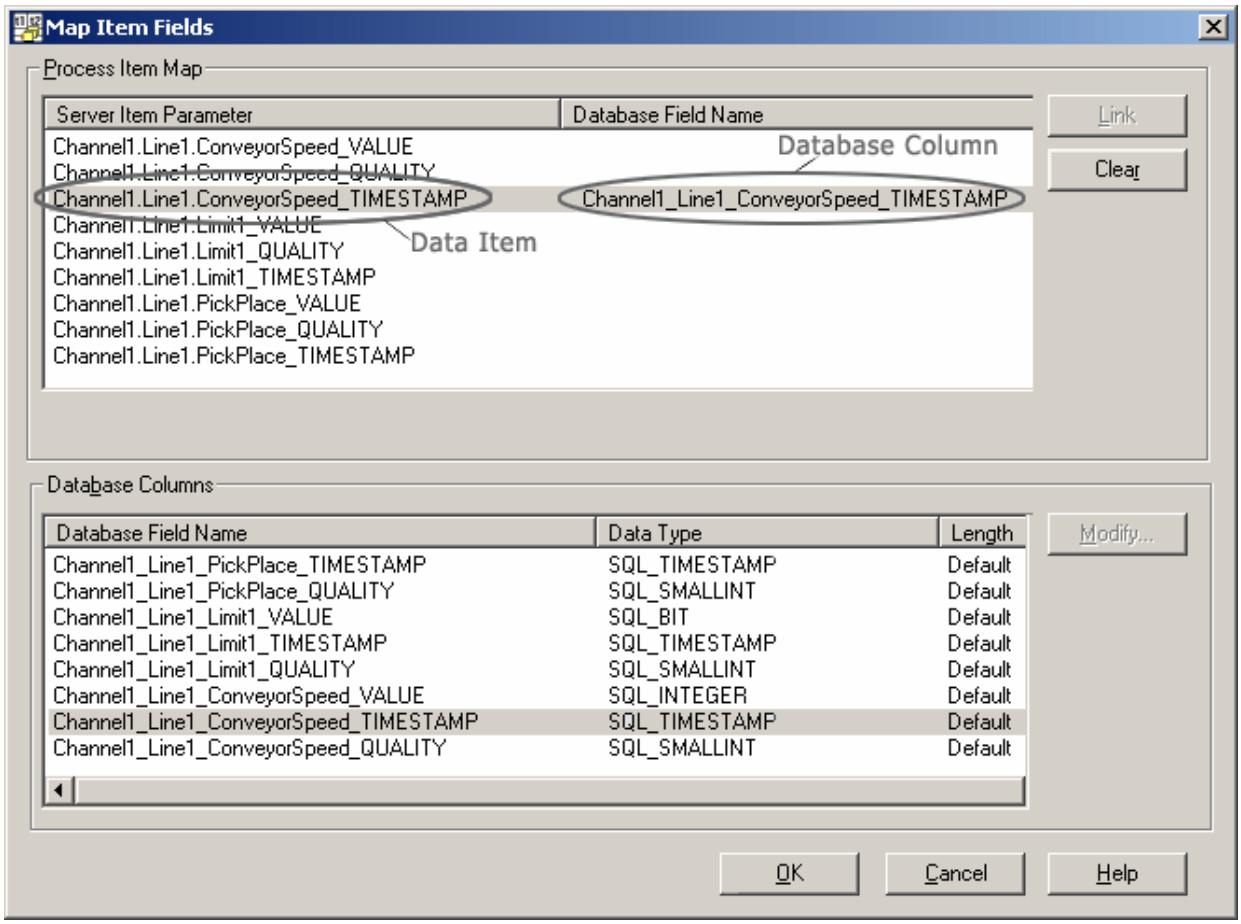


See Also: **Note regarding Server Item Name Length**

Map Item Fields

The Map Item Field dialog is used to map server items to columns in the database table. It shows the server items in the top half of the screen and the database table's columns in the bottom half. How it works depends on whether DataLogger is creating a new table in the database or if the table already exists. To invoke the Map Item Field dialog, click **Data Map Tab** | **Map Fields**.

- If DataLogger is creating a new table, then the item-to-column mappings will be done automatically by DataLogger. Although users do not need to map the item fields, they can customize the columns. For more information, refer to **To Modify a Database Column**.
- If DataLogger is using a table that already exists, then the **Map Item Fields** dialog must be used to map the server items to database columns. For example, the screen below shows a configuration that has nine server items and one server item mapped to a database column. The server item Channel1.Line1. ConveyorSpeed_TIMESTAMP has been mapped to the database column Channel1_Line1_ConveyorSpeed_TIMESTAMP.



To Map a Server Item

1. Click on the **Server Item**.
2. Click on the corresponding column.
3. Click **Link**. The database column name will then be displayed to the right of the server item.

To Change the Mapping

1. Click on the **Server Item**.
2. Click **Clear** in order to clear the field name.
3. Select the correct column.
4. Click **Link**. The database column name will then be displayed to the right of the server item.

To Modify a Database Column

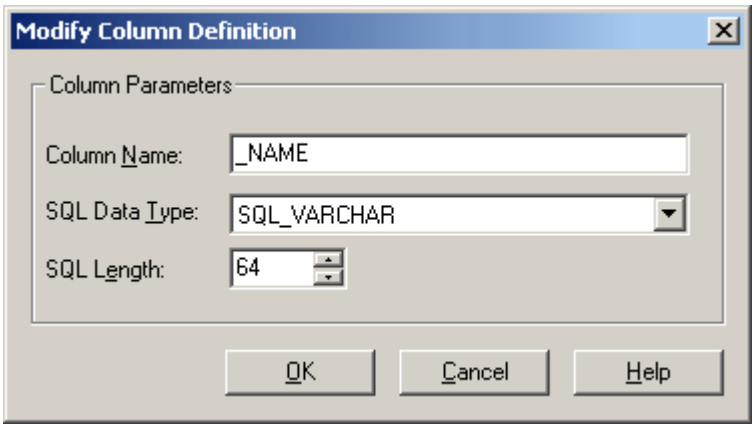
When mapping server items to a new table, use the **Modify** button to change column parameters. For example, to change the default name for a column from "_NAME" to "_Line4v88," users would select the item and then click **Modify** . The invoked **Modify Column Definition** dialog is used to change the default values for column name, data type and length.

Note 1: The Item ID name, **Server Item Parameter** and **Database Field Name** fields have a maximum size of 256 characters as imposed by DataLogger. In practice, however, the maximum usable length will also depend upon the limits of the database and ODBC driver being used. Often the maximum name length for a database column will be 64 or 128 characters.

Note 2: When data is being logged in the Wide format, the **Server Item Parameter** and **Database Field Name** values consist of the channel, device and group(s) names appended to the front of the Item ID name. This in effect further limits the usable name length of the Item ID. **See Also:** **Narrow vs Wide Table Format**.

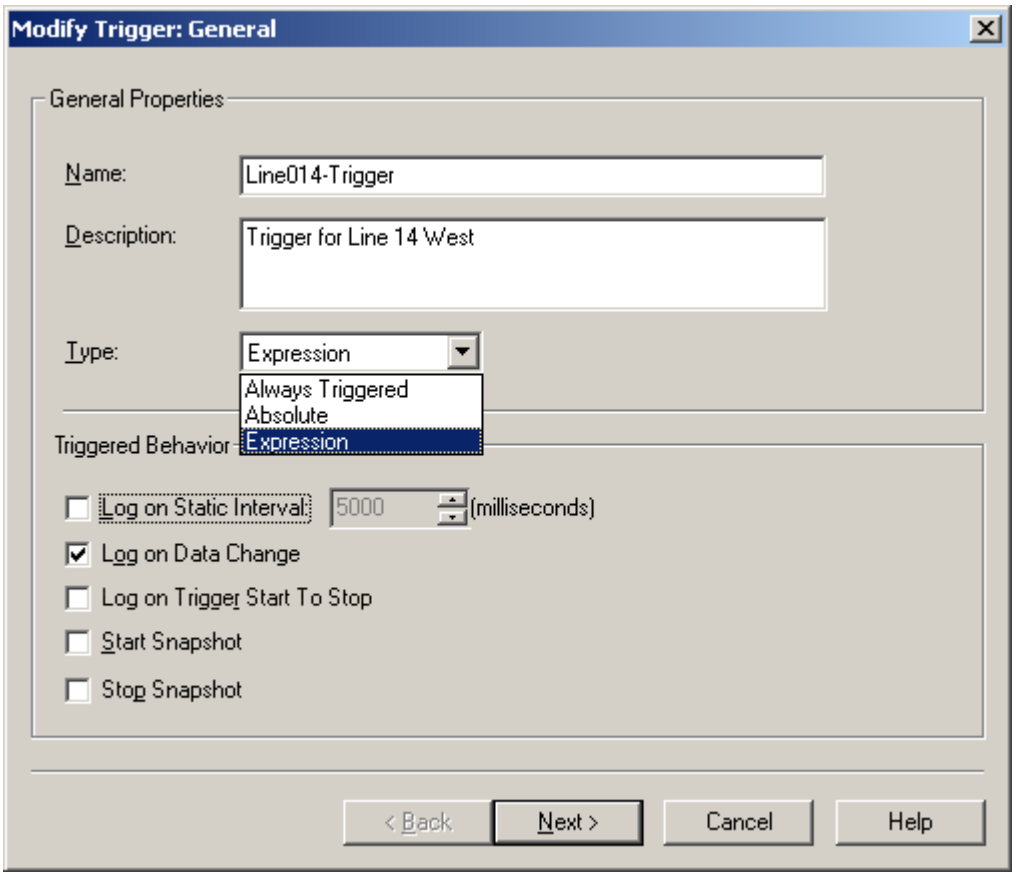
Modify Column Definition

Table columns and parameters are automatically assigned default values. The **Modify Column Definition** dialog is used to change the column name, data type and length.



Add/Modify Trigger - General Properties

Adding a New Trigger



Field	Description
Name	Enter a name for the trigger. Maximum length is 256 characters and cannot include a period or double quote, and cannot begin with an underscore.
Description	Enter a description of the trigger. Maximum length is 4096 characters.

Type	**Always Triggered**	Trigger will be always true, i.e., it will have no false state except for when the Log Group is inactive.
	Absolute	Trigger will be true during an absolute time of day only. The **Absolute dialog** will be displayed when you click the **Next** button.
	Expression	Trigger will be true or false depending upon a conditional expression (e.g., true when the value of tag XYZ is greater than 100, otherwise false). The **Add Trigger: Event Expression dialog** will be displayed when you click the **Next** button.
Triggered Behavior	**Log on Static Interval**	Data will be logged on a static interval (time based). Enter an interval value from 10 to 99999999 ms.*
	Log on Data Change	Data will be logged only when there is a data change.*
	Log on Trigger Start To Stop	Data will be logged only when the trigger item transitions from start to stop condition. This trigger behavior is supported only for the trigger type 'Expression.'
	Start Snapshot	Data will be logged at startup (when runtime commences). For this to occur, Absolute and Expression triggers will need to be in a True state.
	Stop Snapshot	Data will be logged at shutdown (when runtime stops). For this to occur, Absolute and Expression triggers will need to be in a True state.

***Note Regarding Update Rate:** The log group's **Update Rate**, which is entered on the **General Tab**, sets the update rate for data coming from the OPC server to the log group. The valid range is 10 to 99,999 milliseconds. The update rate will affect Static Interval, Data Change, and Trigger Start To Stop selections in the following two ways:

- The update rate should be set to a value less than the Static Interval value, so that the log group's server items are updated more frequently than the static interval.
- Since the update rate determines when the server item changes are processed by DataLogger, the lower the update rate, the more frequently data changes will be received and processed by DataLogger.

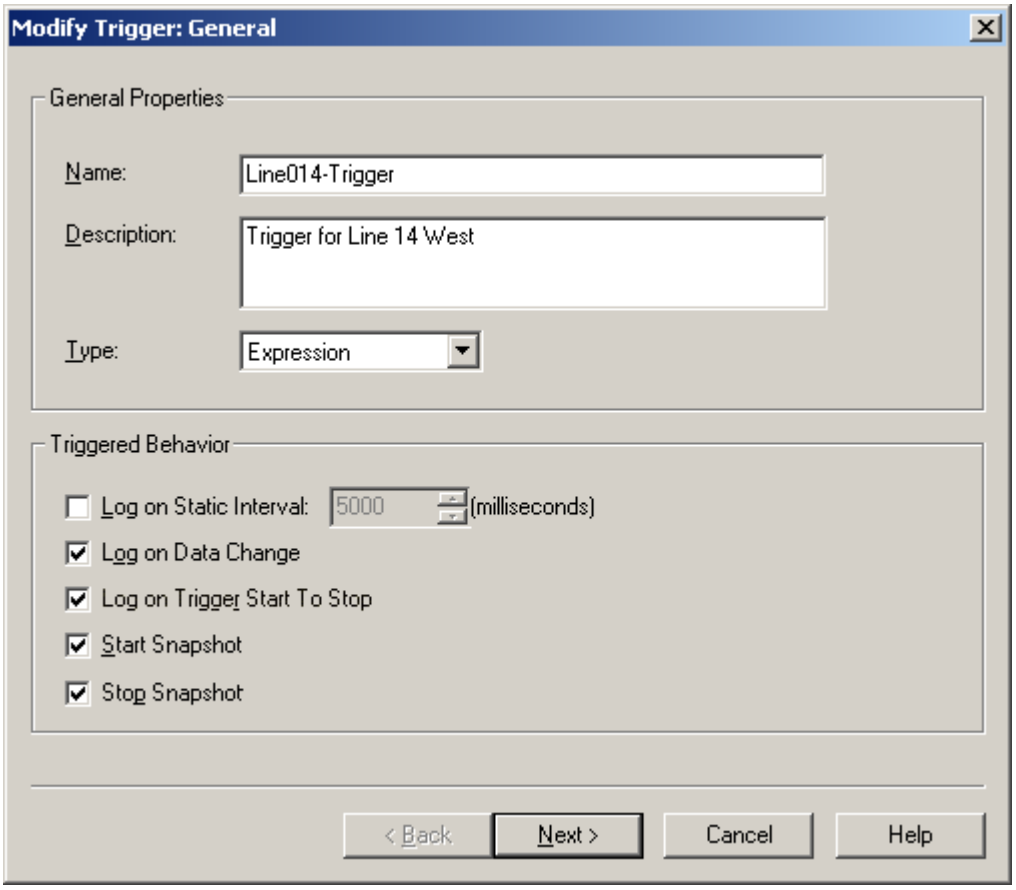
***Note Regarding Timestamp Values:** DataLogger maintains two timestamp values for each OPC server item in a log group.

- One timestamp is updated each time the OPC server scans the controller address, regardless of whether the value has changed since the last scan. As such, this timestamp reflects the "freshness" of the value. This will be the timestamp value that is logged to the database if the insertion was triggered by a static-interval trigger (i.e., when **Log on Static Interval** is checked).
- The other timestamp is updated each time DataLogger has detected a data-value change. If the value of the server item has not changed, the timestamp is not updated. This will be the timestamp value that is logged to the database if the insertion was triggered by a change in the data value (i.e., when **Log on Data Change** is checked).

Note: When finished, click **Next** to continue.

Modifying General Properties

To invoke the **Modify Trigger - General Properties** dialog, click an existing trigger on the **Triggers tab** and then select **Modify**. The fields in the dialog are the same as those displayed when adding a new trigger, except that the field values will reflect the existing trigger information. For individual field definitions, see the descriptions above.



Trigger - Start/Stop Event Expression

Click a link from the following list in order to jump to the Trigger Start/Stop topic.

Overview
Start Condition
Stop Condition

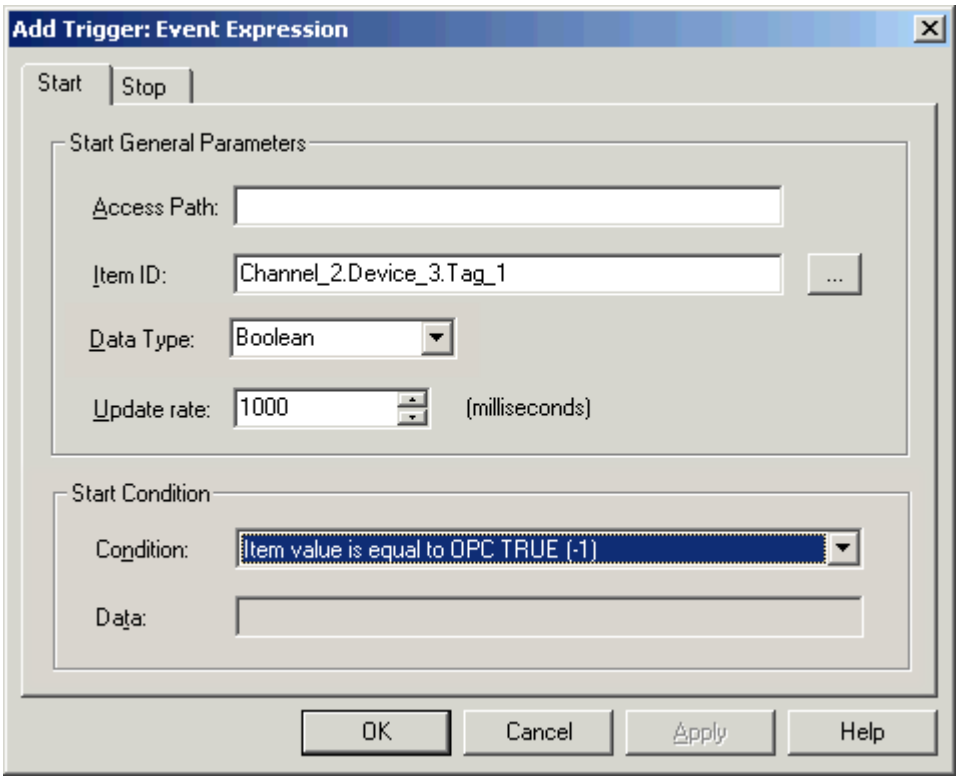
Overview of Start and Stop Conditions

The Event Expression dialog is used to define start and stop conditions for expression triggers. Note the following:

- An event expression trigger can include only one start condition, and one stop condition. (If you want the log group to be triggered by multiple expressions, you should create multiple event expression triggers.)
- At least one start condition is required for an event expression. A stop condition is optional unless the trigger behavior 'Log on Trigger Start To Stop' is selected.
- The log group will be triggered when the start condition becomes true. The log group will then remain triggered regardless of subsequent changes to the start expression state.
- If there is a stop condition, the log group will become not-triggered when the stop condition is true. If there is no stop condition, the log group will remain triggered until the OPC server runtime stops.
- If the start and stop conditions are both true, then the log group is not triggered. While the start condition is true, the stop condition will control whether or not the log group is triggered.
- Log groups are not triggered while the stop condition is true.
- If the trigger behavior 'Log on Trigger Start To Stop' is selected and the trigger item transitions from a start

condition to a stop condition, then the log group is in triggered state.

Start Condition



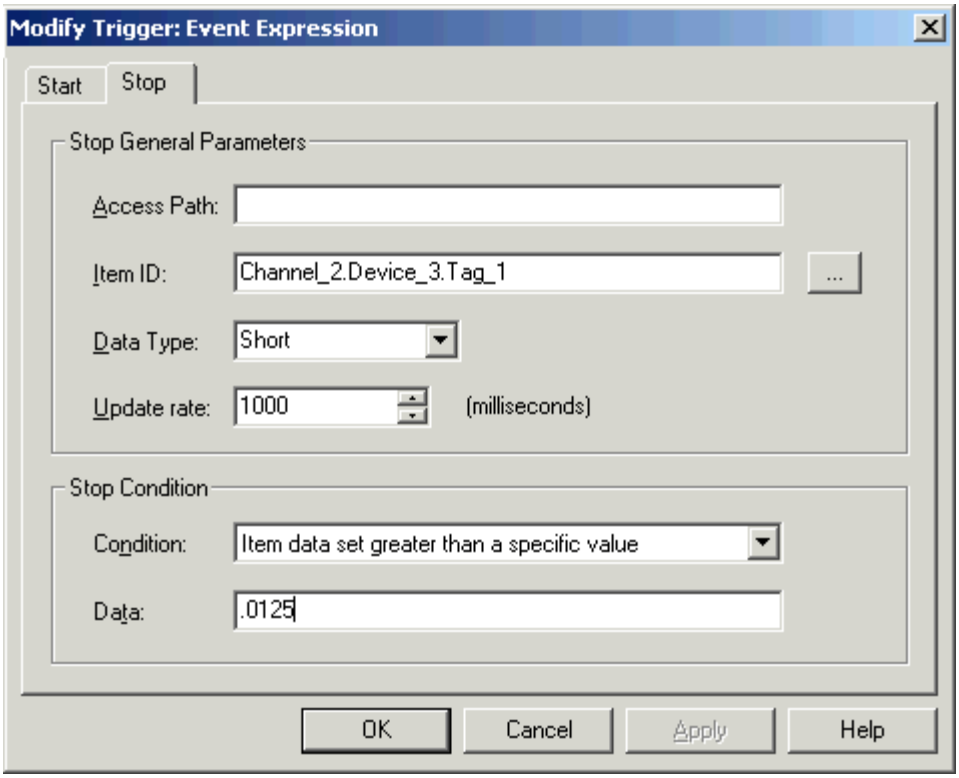
Parameter	Description
Access Path	If the item will be accessed by a nonstandard OPC address, enter the access path here. This is optional.
Item ID	Enter the ID of the server item that will control this condition. The server item can be one that has been **selected to be logged**, or it can be an item that is not being logged. To search for the server item, click the **...** button to browse and select an Item ID.
Data Type	Select the applicable data type.
Update Rate	The log group's global **update rate** is set on the General tab, however, this field is used to set a different update rate for the server item you defined in the **Item ID** field. **Note:** The value in this field can be different from the value in **Update Rate** on the **Stop Condition tab**.
Start Condition*	Use the drop-down list to select the **Condition.** If applicable, enter the conditional value in the **Data** field.

***Examples**

1. If **Condition** is set to "Item value is equal to OPC TRUE (-1)," the condition will be true if the server item in the **Item ID** field becomes true. For this condition, leave the **Data** field blank as it is not necessary. Note that this assumes that the value in **Data Type** is Boolean; if any other data type is entered in Data Type, then the server item value must be -1 in order to make this condition true.
2. If **Condition** is set to "Item data set to bad quality," the condition will be true if the server item in the **Item ID** field goes to quality=bad. For this condition, leave the **Data** field blank as it is not necessary.
3. If **Condition** is set to "Item data set not equal to a specific value" and the **Data** field value is 144, then the condition will be true if the server item in the Item ID field is not equal to 144 (it could be higher or lower).
4. If **Condition** is set to "Item data set less than a specific value" and the **Data** field value is 144, then the condition will be true if the server item in the Item ID field is less than 144.

5. If **Condition** is set to "Item data has not changed over a certain time period (ms)" and the **Data** field value is 15000 (i.e., 15,000 milliseconds), then the condition will be true if the tag in the **Item ID** field has not changed value for 15 seconds.

Stop Condition

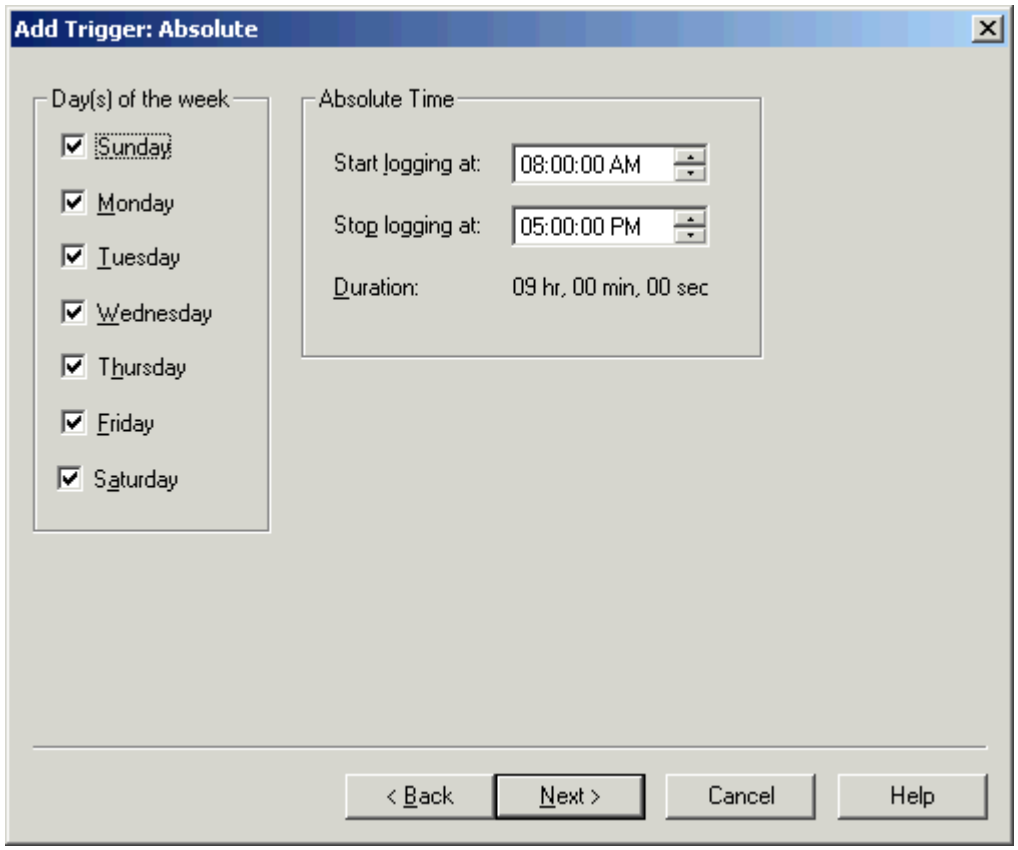


Parameter	Description
Access Path	If the item will be accessed by a nonstandard OPC address, enter the access path here.
Item ID	Enter the ID of the server item that will control this condition. The server item can be one that has been **selected to be logged**, or it can be an item that is not being logged. To search for the server item, click the **...** button to browse and select an Item ID.
Data Type	Select the applicable data type.
Update Rate	The log group's global **update rate** is set on the General tab, however, this field is used to set a different update rate for the server item you defined in the **Item ID** field. **Note:** The value in this field can be different from the value in **Update Rate** on the **Start Condition tab**.
Stop Condition*	Use the drop-down list to select the **Condition**. If applicable, enter the conditional value in the **Data** field.

*Examples

1. If **Condition** is set to "Item data set less than a specific value" and the **Data** field value is 144, then the condition will be true if the server item in the **Item ID** field is less than 144.
2. If **Condition** is set to "Item data has not changed over a certain time period (ms)" and the **Data** field value is 15000 (i.e., 15,000 milliseconds), then the condition will be true if the tag in the **Item ID** field has not changed value for 15 seconds.
3. If **Condition** is set to "Item data set to bad quality," the condition will be true if the server item in the **Item ID** field goes to quality=bad. For this condition, leave the **Data** field blank as it is not necessary.

Trigger - Absolute



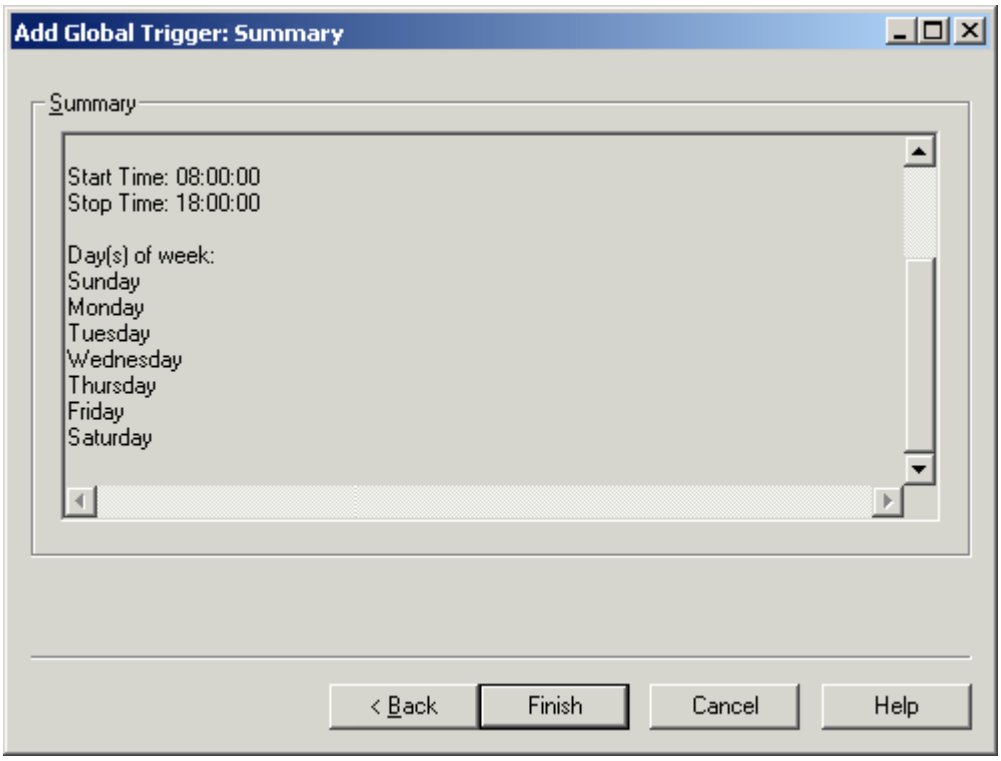
1. Select one or more days in the Day(s) of the Week column.
2. Click on the **Start logging at** field and enter the start time (hours, minutes or seconds). Then, enter either AM or PM.
3. Click on the **Stop logging at** field and set the stop time.
4. The total duration per day is displayed in the **Duration** field.

Note 1: The **Start logging at** and **Stop logging at** fields control the logging time for the days selected in the Days column. In the example shown above, the trigger would be true from Sunday through Saturday, from 8:00:00 AM to 5:00:00 PM.

Note 2: Overlapping midnight (meaning, overlapping from one day to the next) requires that two triggers be created, because this dialog defines the duration **per day.** For example, in order to start logging at 9 PM on Friday and stop at 3 AM on Saturday, then one trigger would be created with **Friday** checked and **Start logging at** set to 9:00:00 PM and **Stop logging at** set to 11:59:59 PM. Another trigger woul dhave to be created with **Saturday** checked and **Start logging at** set to 12:00:00 AM and **Stop logging at** set to 3:00:00 AM.

Trigger - Summary

Review the details and click **Finish**. Alternatively, use the **Back** key to make changes.



System Tags

_DataLogger (Root)

Tag	Access	Description
_TriggeredGroupCount	Read Only	Number of log groups that are currently triggered. (A log group is *triggered* when at least one of its triggers is true.)
_NonTriggeredGroupCount	Read Only	Number of log groups that are not currently triggered.
_EnabledGroupCount	Read Only	Number of log groups that are currently enabled, whether they were enabled at Runtime or via the _Enabled system tag.
_DisabledGroupCount	Read Only	Number of log groups that are not currently enabled.

_DataLogger.<log group name>

Tag	Access	Description
_Description	Read Only	Configured description of the log group
_Enabled	Read/Write	The log group is evaluating server items and processing triggers. (When a log group is enabled, it may or may not be triggered.)
_Error	Read Only	The log group is in an error state (for example, failed to connect to the database).
_NoError	Read Only	The log group is not in an error state.
_SessionInsertionCountHi	Read Only	The upper 32 bits of the insertion count. *Insertion count* is the number of data insertions since the log group was last enabled.
_SessionInsertionCountLo	Read Only	The lower 32 bits of the insertion count.

_TimeToOpenRecordsetMS	Read Only	Time it took to initially open a connection to the database, in milliseconds.
_Triggered	Read Only	The log group is triggered, that is, at least one of the log group's triggers is true. When a log group is triggered, the trigger(s) that are true will insert data on static interval and/or on data change and/or on transition from a start condition to a stop condition, as determined by the settings on the **Add/Modify Trigger - General Properties** dialog.

Error Descriptions

The following error/warning messages may be generated in the Event Log, which is displayed in the lower pane of the OPC server. The messages below are listed in alphabetical order. Click on a message below to view a description of the error message.

Event log is full

Error Type:
Warning/Runtime

Possible Cause:

The event log is full.

Solution:
Refer to the OPC Server Help documentation topic "Server Options" | "Event Log Options."

Failed to add item '<item>' on log group '<log group>'

Error Type:
Warning/Runtime

Possible Cause:
DataLogger failed to add a reference to the server item shown; thus, it will be unable to receive data change or update notifications for that item.

Solution:
Check the server item and verify that it is a valid static or dynamic address.

Failed to create table for unknown reason

Error Type:
Serious/Runtime

Possible Cause:
An unknown failure occurred while generating the table. This is generally due to an ODBC driver error.

Solution:
Verify the DSN settings and consult the ODBC driver documentation and/or create a table manually.

See Also:
Defining the Database Table
Setting up a DSN

Failed to create table name '<table>' for log group '<log group>' on DSN '<DSN>' (Reason '<reason>')

Error Type:
Warning/Runtime

Possible Cause:
DataLogger was unable to create a table for the reason given.

Solution:
Verify the DSN settings and consult the ODBC driver documentation and/or select create a table manually.

See Also:
Defining the Database Table
Setting up a DSN

Failed to create the data table for log group '<log group>'. (Memory Exception)

Error Type:
Serious/Runtime

Possible Cause:
DataLogger was unable to create a table because of a memory exception.

Solution:
Verify the DSN settings and consult the ODBC driver documentation and/or create a table manually.

See Also:
Defining the Database Table
Setting up a DSN

Failed to create the data table for log group '<log group>'. (Reason '<reason>')

Error Type:
Serious/Runtime

Possible Cause:
DataLogger was unable to create a table because of the reason provided by the ODBC driver.

Solution:
Verify the DSN settings and consult the ODBC driver documentation and/or create a table manually.

See Also:
Defining the Database Table
Setting up a DSN

Failed to save DataLogger configuration!

Error Type:
Warning/Configurator

Possible Cause:
DataLogger was unable to apply changes to the DataLogger configuration for the reason given.

Solution:
Load the project backup from the \Project Backups folder (write the backup over the current project) then attempt to remake the changes. Save the changes. If the save causes another error message, contact Technical Support.

Log group '<log group>' contains no server items!

Error Type:
Warning/Runtime

Possible Cause:
DataLogger has detected a log group with no server items. There is, therefore, no data to log.

Solution:
Open the log group and check the Server Item List on the Data Map tab.

See Also:
Data Map Tab

Log group '<log group>' exceeds the item count of '<count>' for the MySQL DSN using the 'Wide' table format

Error Type:
Warning/Runtime

Possible Cause:
Logging activity will be rejected until this count is reduced – The MySQL ODBC driver.

Solution:

Use a different DBMS or use multiple log groups (logging to multiple tables) to 'break up' the total number of items to be logged.

See Also:
Narrow vs Wide Table Format

Log group '<log group>' failed to validate table '<table name>'. Reason: '<reason>'

Error Type:
Serious/Runtime

DataLogger rejected the table format because it does not match the configured data map. There are two possible causes:

Possible Cause #1:
On the Data Map tab for this log group, "Log to an existing table" was selected as the Table Selection option. The table was identified in the Table Name field. This error message indicates that the table does not exist.

Solution #1:
Create the table using your database management system.

Possible Cause #2:
On the Data Map tab for this log group, "Create a new table once and always attempt to append" was selected as the Table Selection option, but the table's columns do not match the configured data mapping.

Solution #2:
1. Delete the existing table, then let DataLogger create a new table once and append to it thereafter.
2. On the Data Map tab, click **Map Fields** and delete the server items for which there are no corresponding database columns.

See Also:
Map Item Fields
Data Map Tab
Defining the Database Table

Log group '<log group>' has requested creation of at least one TIMESTAMP column for table '<table>'

Error Type:
Warning/Runtime

Possible Cause:
The DSN type is Microsoft SQL, which does not support this use of the TIMESTAMP type.

Solution:
DataLogger runtime will convert TIMESTAMP columns to DATETIME columns when creating tables. The user should map only DATETIME columns if using Microsoft SQL Server.

Required schema file '<file>' not found

Error Type:
Serious/Runtime

Possible Cause:
DataLogger schema file (\schemas\dlplugin.xsd) is missing. This file is required regardless of whether the OPC server project is saved as an .opf or .xml file.

Solution:

Check the \schemas folder.

The DataLogger runtime failed to initialize. Reason: <'reason'>

Error Type:
Serious/Runtime

Possible Cause:
The DataLogger runtime was unable to initialize for the reason given.

Solution:
User should try to load the server configuration backup. The last saved configuration file (*project_name*.opf.dlplugin.bak) is saved in the \Project Backups folder on the PC on which the OPC server is running.

The data map for log group '<log group>' is empty. Did you choose 'use existing table' without linking the columns in the configurator?

Error Type:
Warning/Runtime

Possible Cause:
DataLogger detected an empty data map.

Solution:
Check the log group's Data Map tab settings and (either select one of the automatic table-creation options or map the server items.

See Also:
Data Map Tab
Map Item Fields

The query failed because the data source is not appendable. Please double check your user permissions

Error Type:
Serious/Runtime

Possible Cause:
The database table is not appendable.

Solution:
Often the user must explicitly set an 'append' permission on the table using the database software.

Unable to back up project file to '<filename>'. The save operation has been aborted

Error Type:
Warning/Configurator

Possible Cause:
DataLogger automatically generates a backup of the last saved configuration. The last saved configuration file (*project_name*.opf.dlplugin.bak) is saved in the Project Backups folder. This error indicates that the attempt to save the file failed and that an OS-defined reason is available.

Solution:
Check the Project Backups folder. If a copy of the last saved configuration file (*.bak) is there, send the file to Technical Support.

Notes:

1. To enable the automatic backup feature for both the OPC server project and the DataLogger configuration, click **Tools | Options** in the OPC Server. Then, select the General tab and select the "Always backup the last saved project prior to overwriting the file with new changes" checkbox.

2. The Project Backups folder is on the PC that is running the OPC server. Typically, the path is C:\Program Files*OPC server name*\Project Backups.

Unable to connect to data source '<source>'

Error Type:

Serious/Runtime

Possible Cause:

DataLogger is unable to connect to the data source and is unable to determine the cause of the connection failure.

Solution:

Verify the DSN settings and consult the ODBC driver documentation.

See Also:

Setting Up a DSN

Unable to connect to data source '<source>' (Memory Exception)

Error Type:

Serious/Runtime

Possible Cause:

The ODBC driver was unable to make the connection because of a memory exception.

Solution:

Use a different DSN with a different ODBC source.

See Also:

Setting Up a DSN

Unable to connect to data source '<source>' (Reason: '<reason>')

Error Type:

Serious/Runtime

Possible Cause:

DataLogger was unable to connect to the data source because of the reason provided by the ODBC driver.

Solution:

If the database is on a remote computer, double-check the user permissions and verify that the network connection is active.

Unable to load configuration. Reason: '<reason>'

Error Type:

Warning/Runtime

Possible Cause:

DataLogger was unable to load the DataLogger configuration for the reason given.

Solution:

1. Load the configuration backup file (*project_name*.opf.dlplugin.bak), which is saved in the Project Backups folder on the PC that is running the OPC server. Typically the path is C:\Program Files*OPC server*\Project Backups.
2. Write the backup file over the current project.
3. Attempt to make the changes again and then save the changes. If the save causes another error message, contact Technical Support.

Note:
To enable the automatic backup feature for both the OPC server project and the DataLogger configuration, click **Tools | Options** in the OPC Server. Then, select the General tab and click the "Always backup the last saved project prior to overwriting the file with new changes" checkbox.

Unable to open recordseton log group '<log group>'. (Memory Exception)

Error Type:
Serious/Runtime

Possible Cause:
DataLogger was unable to create the mechanism that would allow it to perform an insertion because of a memory exception.

Solution:
If the database is on a remote computer, double-check the user permissions and verify that the network connection is active.

Unable to open recordseton log group '<log group>'. (Reason: '<reason>')

Error Type:
Serious/Runtime

Possible Cause:
DataLogger was unable to create the mechanism that would allow it to perform an insertion because of the reason provided by the ODBC driver.

Solution:
If the database is on a remote computer, double-check the user permissions and verify that the network connection is active.

Unable to query recordset on Log Group '<log group>' (Memory Exception)

Error Type:
Serious/Runtime

Possible Cause:
DataLogger was unable to perform the insertion because of a memory exception.

Solution:
Use a different DSN with a different ODBC source.

See Also:
Setting Up a DSN

Unable to query recordseton Log Group '<log group>'. (Reason: '<reason>')

Error Type:
Serious/Runtime

Possible Cause:
DataLogger is unable to perform an insertion because of the reason provided by the ODBC driver.

Solution:
Use a different DSN with a different ODBC source.

See Also:
Setting Up a DSN

Unable to validate table '<table>' (Memory Exception)

Error Type:
Serious/Runtime

Possible Cause:
DataLogger was unable to validate the table format because the ODBC driver encountered a memory exception while opening the table.

Solution:
If the database is on a remote computer, double-check the user permissions and verify that the network connection is active.

Unable to validate table '<table>' (Reason: '<reason>')

Error Type:
Serious/Runtime

Possible Cause:
DataLogger was unable to validate the table format because the ODBC driver failed to open the table (and provided an error string).

Solution:
If the database is on a remote computer, double-check the user permissions and verify that the network connection is active.

Unknown error while executing query in table '<table>' for log group <'log group'>

Error Type:
Serious/Runtime

Possible Cause:
DataLogger encountered an unknown error while executing an insertion on the opened recordset.

Solution:
If the database is on a remote computer, double-check the user permissions and verify that the network connection is active.

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