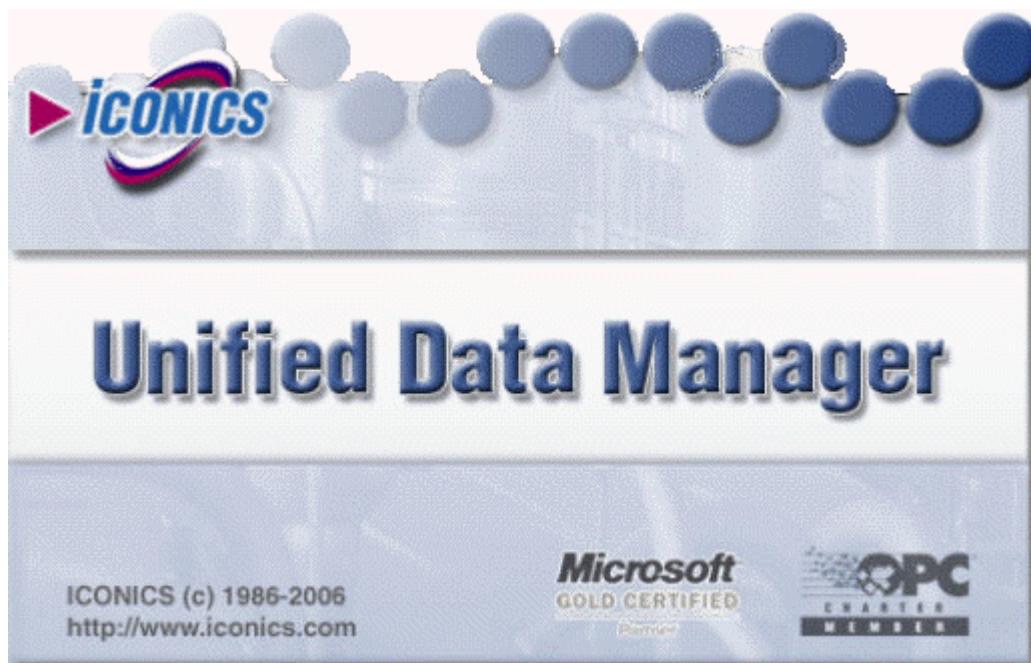


Universal Data Manager

v 9.1



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Getting Started

Introduction

The **Unified Data Manager** (UDM) is a framework application that supports data management for a number of different and disparate ICONICS GENESIS32 applications. Just like the Microsoft Management Console or MMC supports snap-ins that expose different Windows settings and Windows application and service settings, the UDM's items are different types of managed values, data, and stored functions. There are three components to the UDM application:

- The Configurator. The graphical user interface where settings, values, and formulas are created, modified, stored, and displayed. In GENESIS32 version 9.10 there are seven different types of data sources, although more could be added in future versions of GENESIS32. The Schedules data source is new to version 9.10.

The bulk of this on-line help system describes the Configurator because almost all of the settings available to an end user of GENESIS32 are part of this user interface.

- The Configuration Database. An Access or SQL database containing the configuration information used by the UDM. The Configurator displays the file extension of the current database type in the title bar. The Configurator reads and writes to an underlying database which must either be created if one doesn't exist, or opened if the current database isn't the one that you wish to use.
- Runtime. Runtime refers to a set of distributed communications services that take requests from client GENESIS32 applications such as ScheduleWorX32, RecipeWorX32, AlarmWorX32, and clients, as well as from ActiveX components of these applications embedded inside containers such as a GraphWorX32 display. If the required UDM service isn't running at the time of the client request, that service will be started. When there are no more client requests the service is stopped.

The Runtime service `UDMRuntime.exe` READs from the configuration database based on the specifications found in the UDM, returning data to the client application. A second runtime, `UDTRuntime.exe` supports the execution of triggers defined in the UDM.

Within the UDM you can configure:

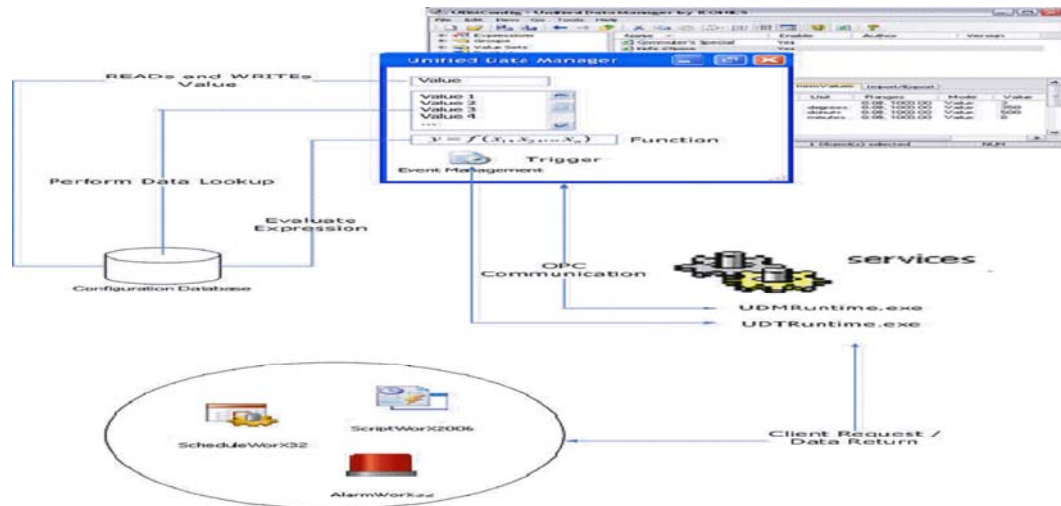
- Expressions
- ValueSets
- Tag groups
- Alarm subscriptions
- Alarm filters
- Recipes
- Event triggers
- Registers

Some of these items are exposed as OPC items and can be accessed from ICONICS applications via the Unified Data Browser. By using the UDM, you can reduce development time and eliminate redundant work.

UDM Architecture

The figure below shows a schematic of the UDM architecture.

The UDM Architecture.



The UDM enables the centralized management of commonly used expressions, ValueSets, tag groups, alarm subscriptions, alarm filters, recipes, and event triggers across GENESIS32 products as well as other ICONICS products. From an easy-to-use interface you can create libraries of reusable expressions, ValueSets, recipes and other functions. The Unified Data manager provides time-saving, on-the-fly selections and modifications of commonly used functions, saving integration and applications development time.

UDM Applications

The **Unified Data Manager** provides a convenient, single Configurator interface that can serve as the global source for variables, aliases, registers, and recipe definitions and values. When you configure an item in the UDM and check the Global Option those items appear in the Unified Data Browse where they are available to GENESIS32 applications that support that type of item. Below is a description of each item in the UDM and how you use them as a data source:

- **Expressions.** You can create expressions in the UDM and use it in all other ICONICS applications where an expression can be used. Each global expression is implemented as a single expression data tag which recalculates on input values OR on trigger data tags. Client applications can access these expression data tags as read/write data tags. Expressions can also accept parameters.
- **Groups.** Group is a collection of data tags that are manipulated as a single item and is represented by a single group tag. Each group tag is treated as a Read/Write variant data type. Any value written to a group tag is written to all the tags included in the group such that all of the tags in the Group have the same value. Group Values are written synchronously to targeted OPC Server(s). Group tags can be accessed in ICONICS applications through UDB.

- **ValueSets.** A ValueSet allows you to write preconfigured sets of values into a group of data tags. Any writes to a ValueSet data tag will distribute written values to all data tags included in the ValueSet. Unlike a Group, each tag in the ValueSet will be written with the present value, which could be different from tag to tag. ValueSet data tags are of string data types and are available as Read/Write data tags. ValueSets values are written synchronously to target OPC server (similarly to Groups). Parameters are also supported by ValueSet data tags

- **Recipes.** Recipe is a list of ingredients that are used to create a product that represents a variation of a specific product type. For each product type, you can have multiple recipes. We can define a recipe in UDM by right clicking on Recipes tree and select New, Recipe. Each recipe constitutes of ingredients (parameters). Each ingredient corresponds to a data tag. Furthermore you can assign a human readable name against each recipe ingredients.

Each recipe can further constitute Recipe items which are variations within a particular recipe. Each recipe item holds value for each ingredient. A recipe item is created by right clicking on the recipe name and the select Recipe Item from the pop-up menu.

Recipes can be accessed in GENESIS32 applications using two ActiveX controls called Tree Explorer ActiveX and Recipe ActiveX. Tree Explorer ActiveX allows you to browse recipes while Recipe ActiveX displays recipe details.

- **Event triggers.** Event Triggers are triggers that are executed when a certain condition occurs. Triggers are used by ScriptWorX32, ScriptWorX2006, and ReportWorX to perform operations. Event Triggers are subdivided into the following categories: Event groups, Event switches, Date/Time, Data, Alarm, File, NT Triggers, and Database triggers.
- **Events Groups** allows different type of triggers to be grouped together under one trigger. Event group **trigger** will fire when an event trigger from its list of triggers is executed. Each event group is represented in UDB as an event data tag.
- **Event Switches** contain a list of triggers and an input value tag. A single event from the list of tags is selected among different triggers based on the input value, allowing only one **trigger** from the trigger list to redirect to Event Switch type trigger. These triggers are accessible over the network. Each event switch trigger type is accessible from UDB as an event switch data tag.
- **Date/Time Triggers – executes** an event periodically according to a specified recurrence pattern. The recurrence pattern can be daily, weekly, monthly, or yearly. Each Date/Time trigger is represented in UDB as a date/time data tag.
- **Data Triggers** fire for any of the following three conditions: "Execute the trigger when there is any change to the input tag," "Execute the trigger when the input data value **becomes** TRUE," or "Execute the trigger when the input data value becomes FALSE."

- **Alarm Triggers** executes when a specified alarm condition is detected. To configure an alarm trigger create a new alarm subscription and an alarm filter to correspond with the alarm trigger. The trigger executes based on the current alarm subscription/filter properties upon one of the following conditions: "Alarm/Event: The trigger is executed when an alarm or an event occurs," "Return to **Normal**: The trigger is executed when the values return to normal after an alarm has occurred," or "Acknowledgement: The trigger is executed when an alarm is acknowledged."
- **File Triggers** are events that are file system related. These event include: On File Create, On File Delete, On File Length Change, On File Last Write Time Change, On File Last Access Time Change, On File "Hidden" Attribute Change, On File "Read Only" Attribute Change, On Subfolder Create, On Subfolder Delete, On Subfolder "Hidden" Attribute Change, On Subfolder "Read Only" Attribute Change, and Subfolder Recursive Monitor. File Trigger events are called the **Fire condition**.
- **NT Event Triggers** occur based on new entries in the Windows event log. NT Event triggers are also called fire conditions. Following are the fire conditions: "Error Event Detected: Fires when a new error event is posted to the Windows **event** log," "Warning Event Detected: Fires when a new warning event is posted to the Windows event log," "Information Event Detected: Fires when a new information event is posted to the Windows event log," "Audit Success Event Detected: Fires when a success audit event is posted to the Windows event log," or "Audit Failure Event Detected: Fires when a failure audit event is posted to the Windows event log."
- **Database Triggers** fire when changes are detected in specified database tables. You need to **create** connection to the database and the Table/Query you want to use for this trigger. The trigger fires when any of the fire conditions become true OR While the fire condition remains true
- **Alarm subscriptions**. An alarm subscription defines a connection to an alarm server. The Alarm Subscriptions tree control in the Unified Data Manager enables you to set up subscriptions to OPC Alarm and Event servers. Alarm Subscription in UDM allows global management of alarm subscriptions. User can define local and global alarms.
- **Alarm filters**. Alarm filters allow users to filter an alarm subset. The Alarm Filters tree control in the Unified Data Manager enables you to set up alarm filters for subscribed OPC Alarm and Event servers. You can make filters that only filter a specific alarm tag or filters that filter a group of alarms. Creating Alarm Filters in UDM allows global management of alarm filters. User can define local and global alarm filters.
- **Schedules**. Schedules are periodic events that are assigned to resources. Schedules you create in ScheduleWorX32 store their data in the UDM, thus allowing schedule data to be shared across systems over the network. There are two types of schedules: Control Schedules and Availability Schedules. Availability schedules return a numeric value indicating that a resource is available. Control

schedules uses its schedule to modify OPC tag values, rather than representing one value as the availability schedules do.

Once you have configured your data tags, they can be accessed from many applications via the Unified Data Browser. In many ways the UDM is one of those applications that you don't need to know much about. You specify a connection by selecting a data tag and the UDM starts up when called by the client application through the GenBroker service. In this regard UDM acts just like any other COM application. However, there are some exceptions.

The UDM is an optional data source in several applications that make use of these types of values and events. Some applications in the GENESIS32 suite such as event triggers, recipes, and certain scheduling applications are clearly more powerfully configured in the UDM as a subscription. There are instances where scheduling in other GENESIS32 applications are best managed locally without the  use of the UDM. The UDM is a relatively new application, and over time more functionality is being added to this application.

For other components such as expressions, groups, ValueSets, and alarms it is possible to work within other GENESIS32 applications to manipulate these items. However, you will often find that there are advantages to working in the UDM when it is an available option. For example, the UDM allows you to create an expression once and have that expression available everywhere. When you define a single instance of an expression, or a group or ValueSet for that matter, there is less overhead involved in maintaining the data and ensuring accuracy - which is a distinct advantage.

Recipes and triggers are two features that people use the UDM heavily for. The Recipe ActiveX Tree and the Recipe ActiveX Grid controls use UDM exclusively. Triggers show up in ScriptWorX 2006 as well as in BridgeWorX and ReportWorX, but there are instances where it makes sense to have a trigger running centrally rather than locally. Triggers in the UDM gives you a central location where you can manage and use triggers.

UDM Runtime

The Runtime component of the UDM works as a COM application, turning on when it has a request from GenBroker, and turning off when it doesn't detect a request for a certain period of time. There are no configurable options to the UDM Runtime other than having it run or not run.

However, there is one instance where the UDM Runtime must always be available; that is for the use of Registers in applications. As GENESIS32 is currently structured, there is no way for Registers to be called within an application. It is expected that when a Register value is required that it be available from the UDM automatically. Therefore, the UDM Runtime has the single control that can turn the service on and leave it on, or turn it off. It is controlled by the traffic light signal icon in the UDM Toolbar.

To **turn the UDM on** so that it runs like a service:

Click the **Runtime button**  on the Standard toolbar.

The UDM is placed in runtime and stays in runtime until you turn off the service.

Should you close the UDM and then reopen it you should notice that the Runtime icon is still green, indicating that it is still running.

To **turn the UDM off** so that it runs like a service:

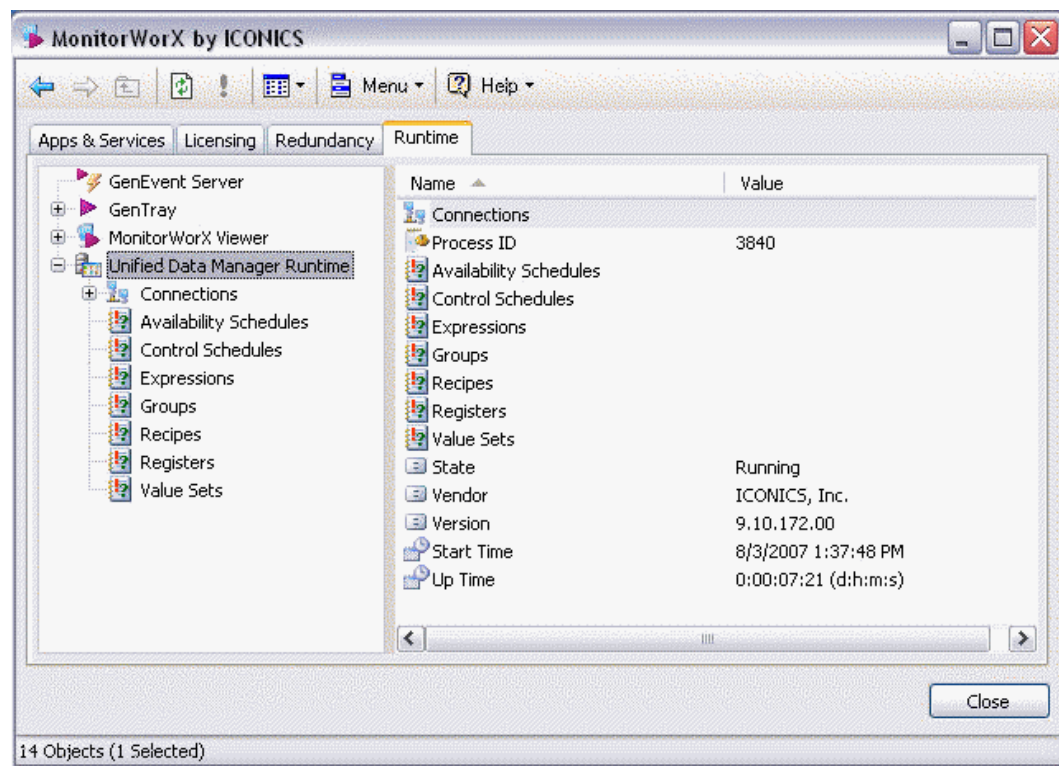
Click the **Runtime button**  on the Standard toolbar.

The UDM is placed in configuration mode, the Runtime button turns red  and the runtime service is turned off.

You can see when the UDM is in runtime from within MonitorWorX. To launch MonitorWorX and view UDM Runtime properties:

1. Click Start, All Programs, ICONICS Tools, and then the MonitorWorX command.
2. Click on the Runtime tab, then navigate the tree control and click on Unified Data Manager Runtime, as shown below.
3. Click on the Connections node in the tree if you want to see both local and remote UDM Runtime connections.
4. To view the connections for individual items, click on the item name in the left hand tree control.

Viewing the UDM Runtime in MonitorWorX.



Local vs. Distributed UDM Runtime

Every installed copy of GENESIS32 installs a copy of the UDM in the Tools folder. Therefore, you can choose to run the UDM locally when it is convenient for you to do so, or on a single server in a central location when you want to share settings between systems and users. A local service makes sense when the UDM doesn't need to support clients in other networks or on systems that can access the local system. A centralized UDM server makes sense when it can be successfully

accessed by multiple systems. Both types of configurations are possible, and both are often used in GENESIS32 solutions.

Please note that when there are more than one instance of the UDM running, either locally or in a shared system that the UDM data stored in the multiple databases do not synchronize or communicate with one another. Each database is a separately maintained data store in GENESIS32 9.10, and has been so since the introduction of UDM in GENESIS32 8.0.

What's New

The Unified Data Manager new features and enhancements include:

- Support for Registers
- The ability to view Schedules
- Changes in the UDM interface for creating, modifying, and managing ValueSets.

Contents

Getting Started

[Introduction](#)

[Getting Started](#)

[Finding and Replacing Items](#)

[Configuration Databases](#)

[Configuration Data](#)

[Preferences](#)

User Interface

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)

[View Menu](#)

[Go Menu](#)

[Tools Menu](#)

[Help Menu](#)

Expressions

[Expressions](#)

[Expression Item Properties](#)

Groups

[Groups](#)

[Group Item Properties](#)

ValueSets

[ValueSets](#)

[ValueSet Item Properties](#)

Recipes[Recipes](#)[Creating a New Recipe](#)[Recipe Settings](#)[Recipe Item Settings](#)**Registers**[Registers](#)[Register Properties](#)**Events**[Event Triggers](#)[Event Groups](#)[Event Group Item Properties](#)[Event Switches](#)[Event Switch Item Properties](#)**Triggers**[Date/Time Triggers](#)[Time Trigger Item Properties](#)[Periodic Triggers](#)[Periodic Trigger Item Properties](#)[Data Triggers](#)[Data Trigger Item Properties](#)[Database Trigger Item Properties](#)[Alarm Triggers](#)[Alarm Trigger Item Properties](#)[File Triggers](#)[File Trigger Item Properties](#)[NT Event Triggers](#)[NT Event Trigger Item Properties](#)[Database Triggers](#)[Database Trigger Item Properties](#)**Alarms**[Alarm Data Management](#)[Alarm Subscriptions](#)[Alarm Subscription Item Properties](#)[Alarm Filters](#)[Alarm Filter Item Properties](#)**Schedules**

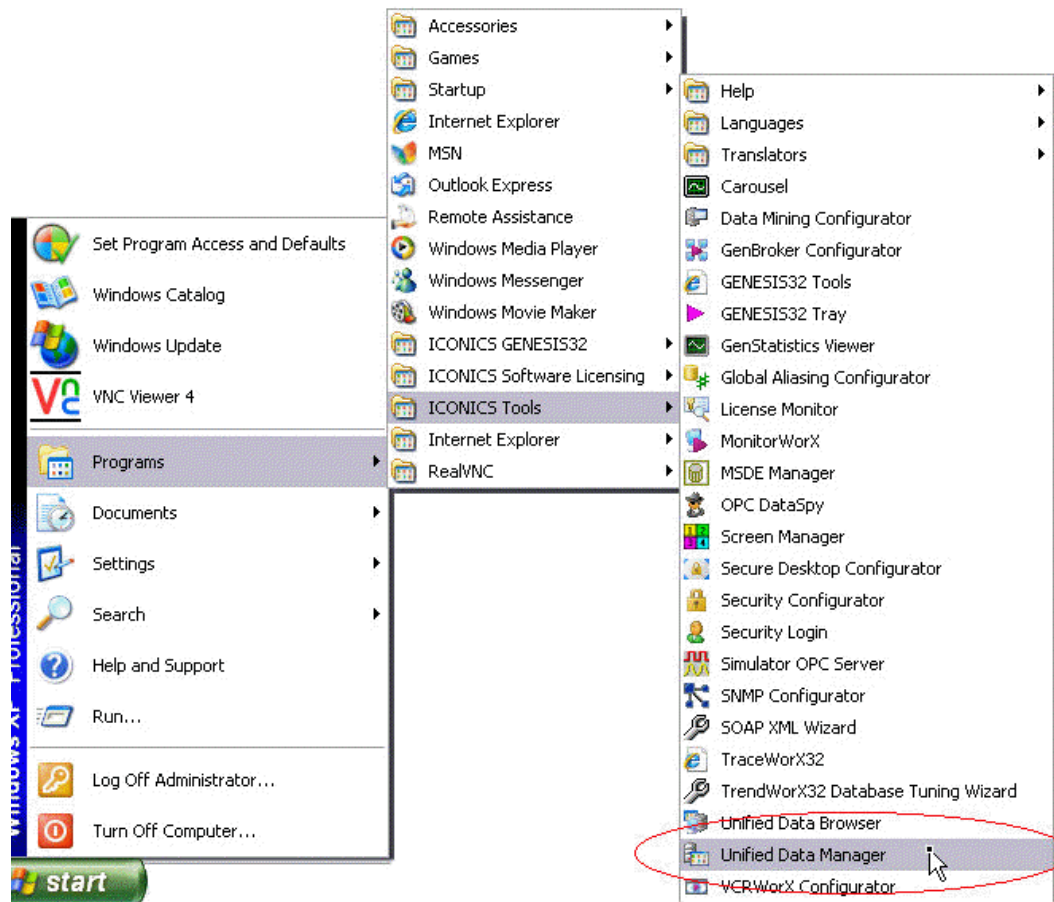
Schedules

Getting Started

To start the Unified Data Manager:

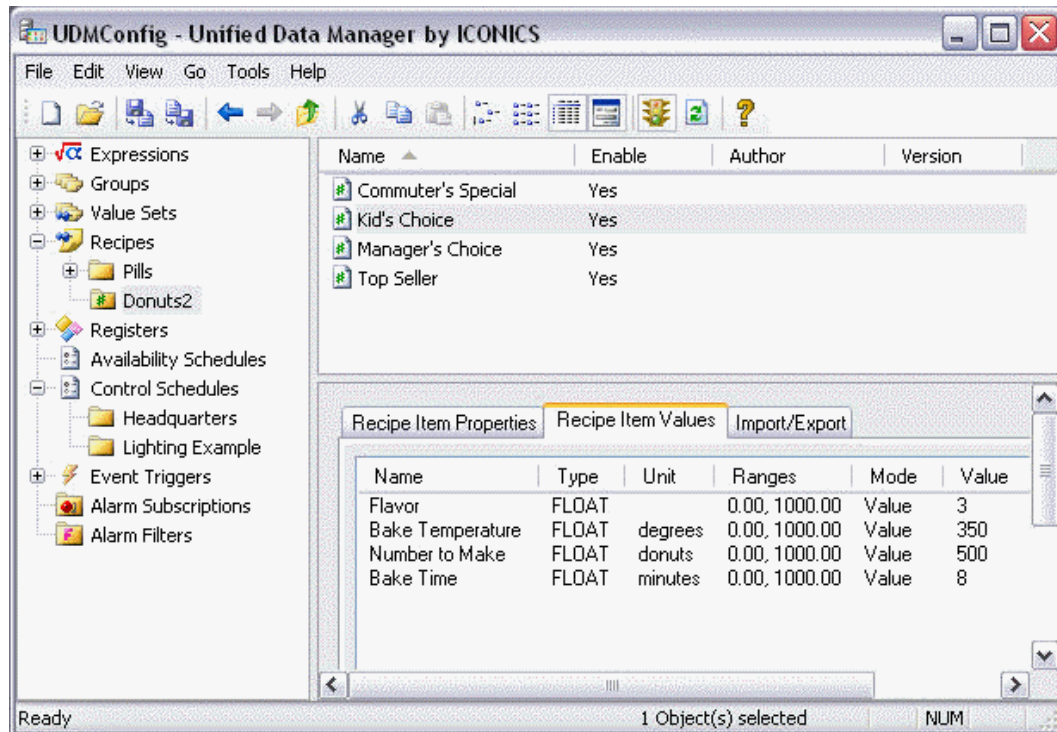
Click **Start**, select **Programs**, **ICONICS Tools**, and then select the **Unified Data Manager** command as shown below.

The Unified Data Manager menu command.



This opens the Configurator, as shown in the figure below. The Unified Data Manager consists of a split window with a tree control view in the left-hand pane and a configuration view in the right-hand pane. The Configurator provides a standard format for the configuration database, as well as a sample (default) configuration project. The Configurator also includes toolbars and menus with many command functions.

The Unified Data Manager Configurator



The Unified Data Manager is a graphical front end to a stored database. The items you see in the Item tree are records in that database, and the values for each item are data stored with each record. In some instances such as expressions the UDM takes input and evaluates that input based on the formula defined, and then returns output to the GENESIS32 client that has requested the data.

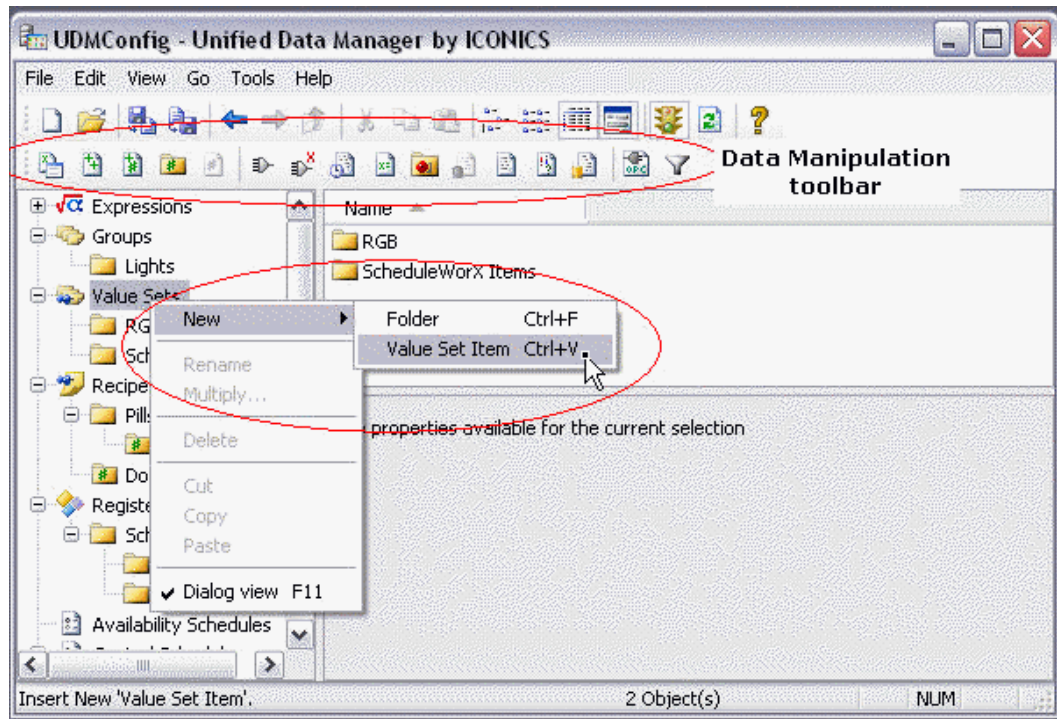
Creating Items

The Unified Data Manager contains collections of items organized into folders. There are two places that you can go to create new items and folders:

- The New menu on each folder or item's context menu.
- The buttons on the [Data Manipulation toolbar](#)

Both of these features are shown in the figure below.

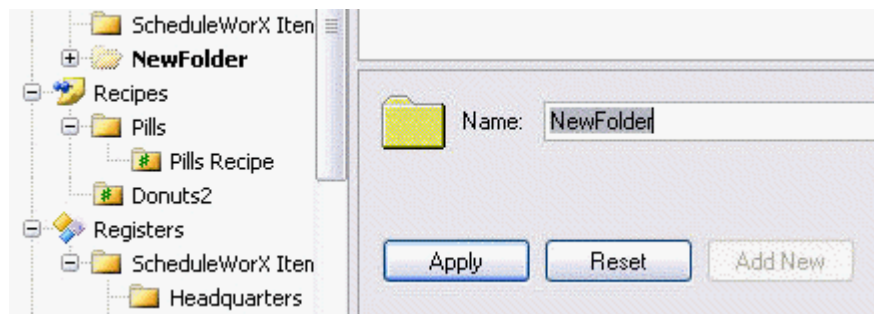
Places where you can create new items and folders.



Every New Folder command (all item types) have the Ctrl+F keystroke equivalent. However, not all item types have keyboard equivalents. Here New ValueSet Item can be applied with Ctrl+V, but if you open the New menu for the Recipe items you will not find a keystroke equivalent.

When you create a new folder, you are prompted to name it as shown below.

Naming a new folder.



You can also use the Add New button to create a new folder when you have a folder selected in the tree view pane.

When you create new items, the creation process requires that you enter the properties of that item type before you add the item to your list.

Multiplying Items

The Configurator allows you to multiply items in the tree control. Multiplication provides a simple way of developing configurations where there are many similar items in a given category. To multiply an item:

1. **Select the item** in the tree control that you wish to multiply.
2. Either right-click on the item and select **Multiply** from the pop-up

menu, or select Multiply from the Edit menu. This opens the Multiply Item dialog box, shown below.

Multiply Item Dialog Box

When the items are multiplied, they are all given a base name followed by a number. The default base text is the name of the item selected for multiplication. :

1. To modify the base text change the **Base Text** field appropriately.
2. In the **First Number** field, specify the number to appear next to the first multiplied item.
3. In the **Number of Items** field, specify how many items you wish to create.
4. In the **Numeric Places** field, specify the minimum length of each number to append. Values that take up less space than the specified amount of numeric places will have zeros before the number.
5. If you want to multiply all subfolders as well, check the **Including Subtree** check box.
6. Click the **OK** button to do the multiplication. The example configuration shown in the **Multiply Item** dialog box above creates three new items with the following names:

NewFolder001

NewFolder002

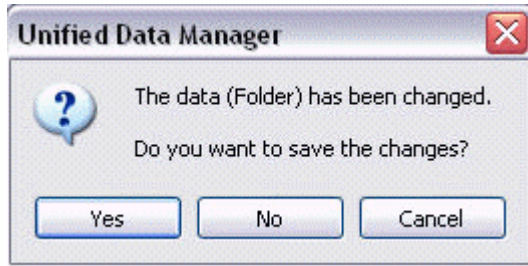
NewFolder003

All subfolders will also be multiplied.

Saving Data

The Unified Data Manager does not have a save command. However, you can save in one of two different ways. You can specify that the program auto-saves when you leave the modification and move to another item; or you can specify that changes require your confirmation. The Save Confirmation alert box is shown in the figure below.

The Save Confirmation alert box.



To switch between these two modes of saving changes:

1. Select the **Options** command from the **Tools** menu
2. Either enable or disable the Automatically apply changes when selection is changed check box.

[Contents](#)

[Introduction](#)

[Getting Started](#)

[Finding and Replacing Items](#)

[Configuration Databases](#)

[Configuration Data](#)

[Preferences](#)

Finding and Replacing Items

The Find and Replace function on the Edit menu allow you to find and replace strings.

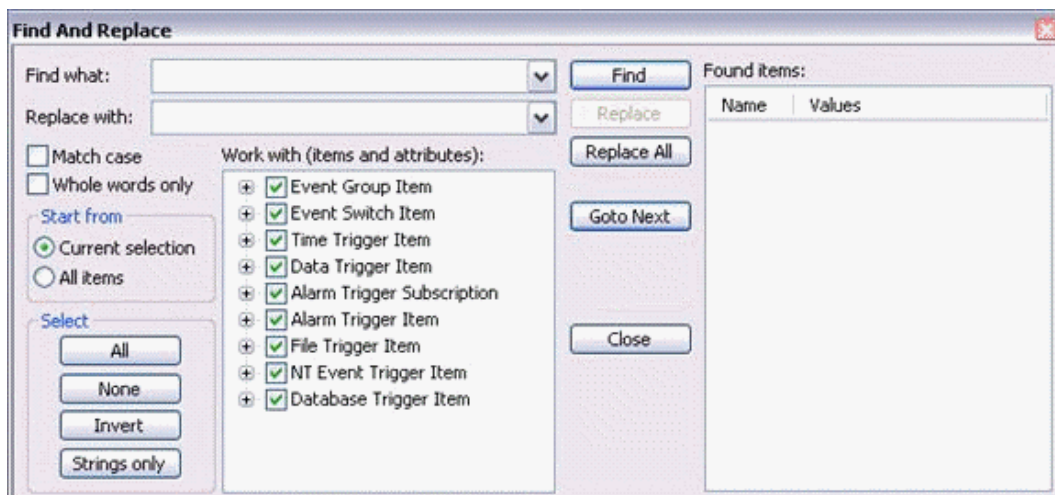
To perform a find:

1. Select **Find and Replace** from the **Edit** menu.

The **Find and Replace** dialog box appears, as shown in the figure below.

2. Enter the search string in the **Find What** field.

The Find and Replace dialog box.



The replace operation works in a similar way and replaces the **Find What** string(s) with the **Replace With** string(s). When the search or replace operation is completed, the results are displayed in the **Found Items** pane on the right side of the **Find and Replace** dialog box.

In the **Work With (Items and Attributes)** field, check one or more types of search options:

- **All:** Selects items and attributes.
- **None:** Unselects all items and attributes.
- **Invert:** Unselects the currently selected items and attributes, and selects the currently unselected items and attributes.
- **Stings Only:** Selects items and attributes that contain strings.
- In the **Start From** field, select the scope of the search:
- **Current Selection:** Searches only the current selection.
- **All items:** Searches all items in the Configurator.
- **Current Display:** Searches the entire currently loaded display.
- **Multiple Files:** Searches in multiple display files. Click the ... button to open the **Edit File List** dialog box, which allows you to specify a list of files to search.

You can check one or both of the following search options:

- **Match whole word only:** Restricts the search operation to whole-word matches.
- **Match case:** Restricts the search operation to case-sensitive matches.
- When you are ready to execute a find or replace operation, click one of the following buttons:
- **Go to Next:** Finds the next match.
- **Find:** Finds all occurrences of the search text.
- **Replace:** Replaces a single match and then advances to the next match.
- **Replace All:** Replaces all occurrences of the search text with the replacement text.
- **Close:** Stops an in-progress search or replace operation.

[Contents](#)

[Introduction](#)

[Getting Started](#)

[Finding and Replacing Items](#)

[Configuration Databases](#)

[Configuration Data](#)

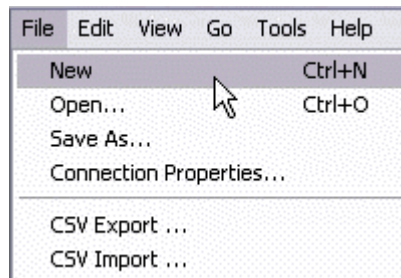
[Preferences](#)

Configuration Databases

The Configurator provides a Configuration Database Wizard for creating new Microsoft Access and SQL Server configuration databases. To create a new configuration database in the Configurator:

1. Select **New** from the **File** menu, as shown in the figure below.

Creating a Configuration Database



The introduction screen for the Configuration Database Wizard appears. Click the **Next** button to continue.

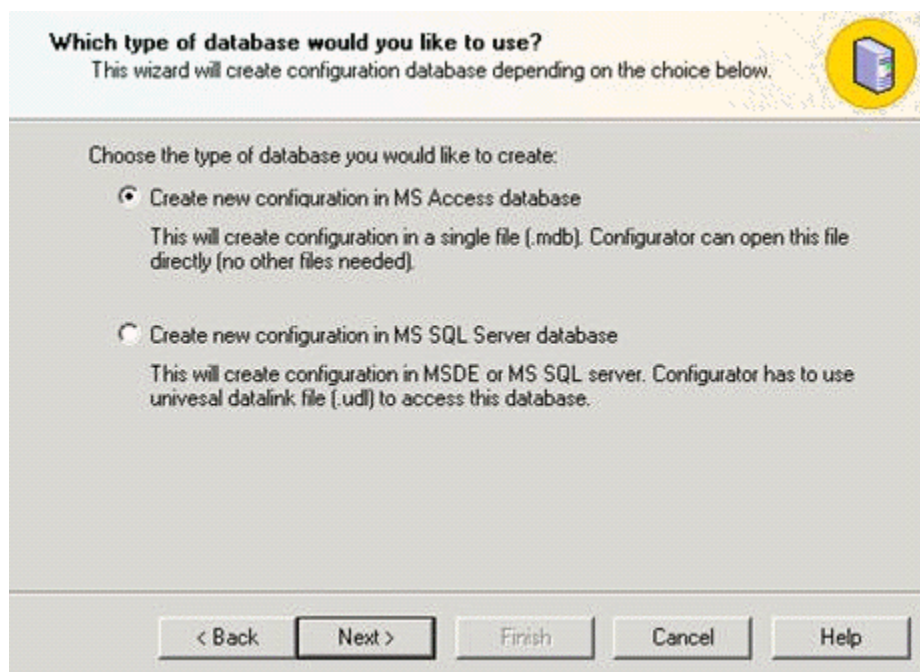
2. You have two options for creating your new database, as shown in the figure below:

Create a new Microsoft Access configuration database: For a Microsoft Access database, the Configurator uses a single .mdb file.

Create a Microsoft SQL Server database: The Configurator uses Universal Data Link (.udl) files to connect to a Microsoft SQL Server or MSDE database. The Configurator supports SQL 2000, SQL 2005, MSDE 2000, and SQL Express 2005.

3. Select the database type you want to create, and then click **Next**.

Choosing the Type of Database To Create

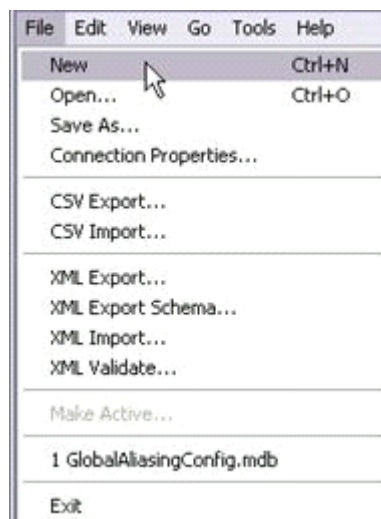


Creating a Microsoft Access Configuration Database

To create a new Microsoft Access configuration database in the Configurator:

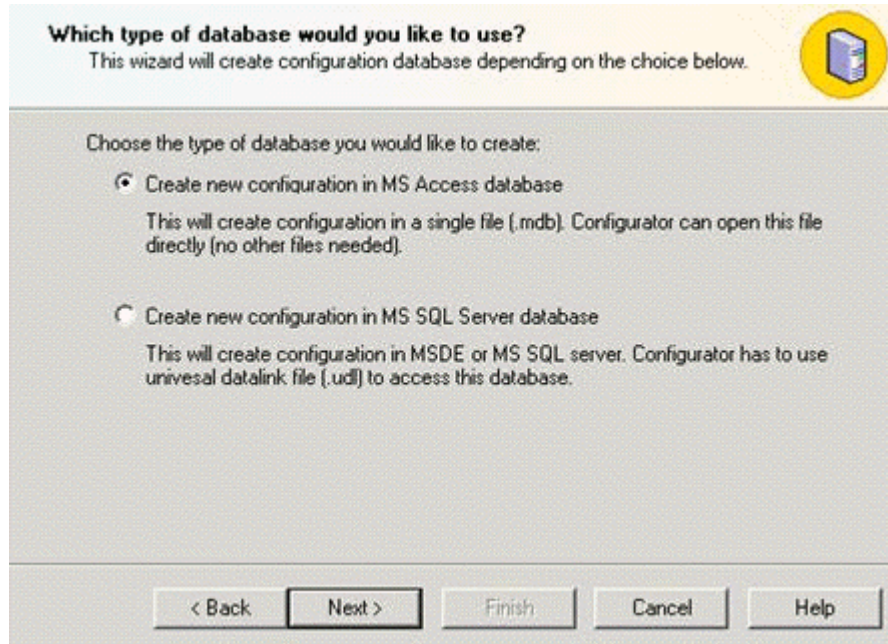
1. Select **New** from the **File** menu, as shown in the figure below.

Creating a Configuration Database



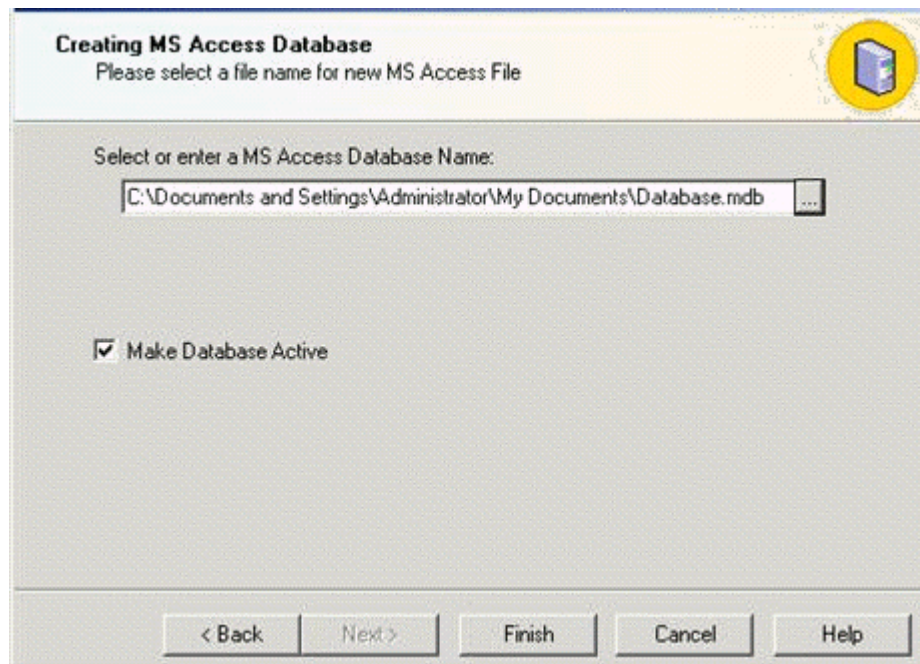
2. The introduction screen for the Configuration Database Wizard appears. Click the **Next** button to continue.
3. You have two options for creating your new database, as shown in the figure below. Select **Create new configuration in MS Access database**. Click the **Next** button to continue.

Creating a New Microsoft Access Database



4. Specify the directory path and file name for the new database, as shown in the figure below. Click the ... button to browse for a directory. If you want this new database to be the active configuration database, check **Make Database Active**.

Naming the New Access Database



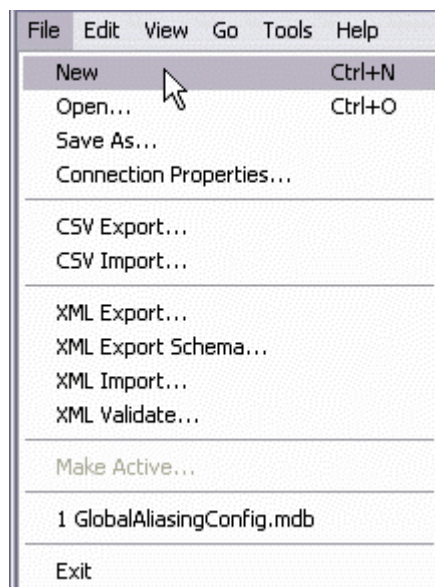
5. Click the **Finish** button. The new database is created and opened in the Configurator.

Creating a Microsoft SQL Server Configuration Database

To create a new Microsoft SQL Server configuration database in the Configurator:

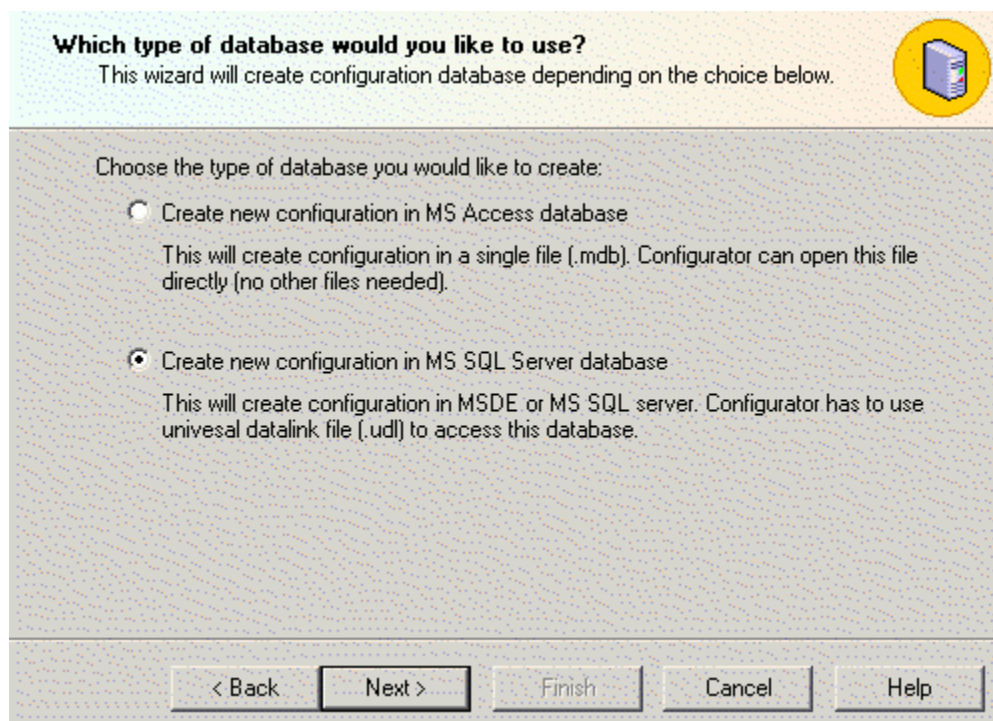
1. Select **New** from the **File** menu, as shown in the figure below.

Creating a Configuration Database



2. The introduction screen for the Configuration Database Wizard appears. Click the **Next** button to continue.
3. You have two options for creating your new database, as shown in the figure below. Select **Create new configuration in MS SQL Server database**. Click the **Next** button to continue.

Creating a New Microsoft SQL Server Database



4. To connect to a SQL Server database, either select an existing database from

the **Database Name** drop-down list, or a type a new name to create a new database, as shown in the figure below. If you choose to use an existing database, you have the option of adding (auto-appending) the configuration to the existing database. (For more information about the auto-append function, please see "Adding the Configuration to an Existing Database.")

In the **SQL Server Name** field, select the local SQL Server on which to create the database. If necessary, enter a user name and password to log on to the SQL Server. (It is recommended that you use Windows NT integrated security.)

Note. Usually you have only one instance of SQL Server running on the local node. In this case, the drop-down list under **SQL Server Name** has only one option: "(local)." However, it is possible to run multiple SQL Server instances on the local node, in which case the **SQL Server** field lists all those SQL Server instances: "(local)" for the default instance and node_name/instance_name for all others. The drop-down list may show SQL Server instances on other nodes as well.

Connecting to a SQL Server Database

5. Specify a **directory path location** in which to create the database, as shown in the figure below.

You can either use the default SQL Server database folder, or you can click the ... button and browse for a specific folder.

Specifying the Database Location and Properties

Under the **Database Properties** section, specify an initial size for the database, which should be as large as possible. You can also specify a **Database Growth** option (in megabytes) or as a percentage of the total size. MSDE servers are capable of growing the database on the fly to store more data. However, if this operation is performed frequently, the overall system performance may decrease. Choosing an initially large database size and a corresponding database growth option can drastically improve system performance.

Under the **Log File Properties** section, you can also modify the settings for the database transaction log file. Specify a **Log File Growth** option (in megabytes) or as a percentage of the total size. Again, a sufficient initial size setting can greatly improve performance. The default options should be adequate for most applications with a small to medium size load.

6. Click the **Next** button to create the new SQL Server database.

Setting a Data Connection

The Configurator uses Universal Data Link (.udl) files to connect to the Microsoft SQL Server database. These .udl files contain OLE database connection information that allows the Configurator to create and manage connections to OLE databases.

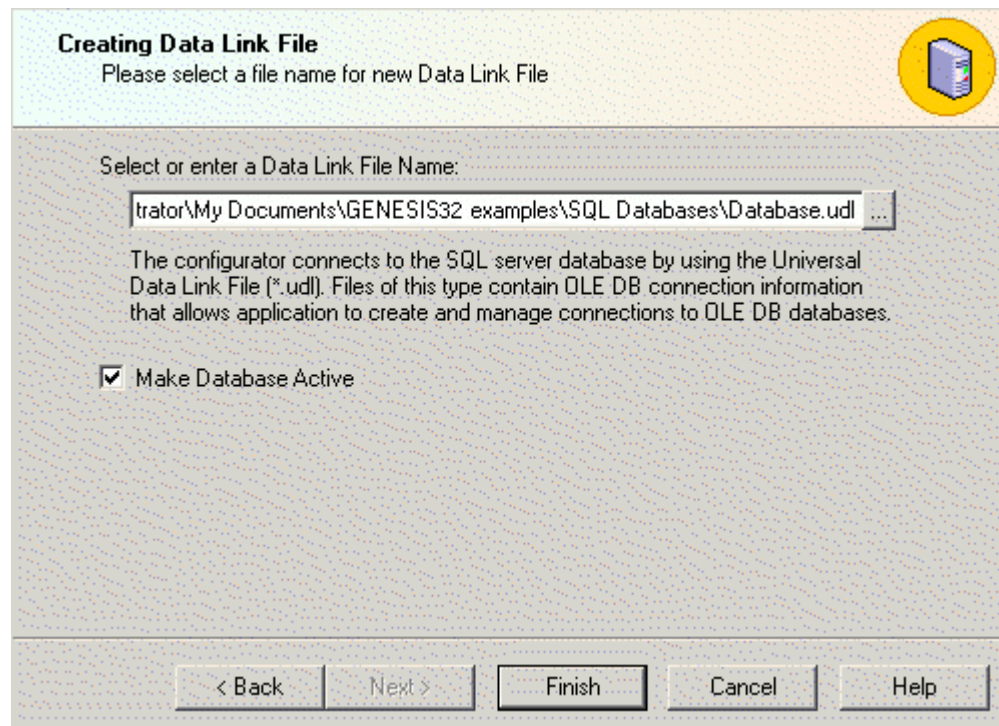
To set a data connection

1. Enter a name and directory path for the new .udl file in the **Data Link File Name** field, as shown in the figure below.

You can browse for a directory by clicking the ... button to the right of this field.

2. Click the **Next** button to continue. If you want this new database to be the active configuration database, check **Make Database Active**.

Creating a Universal Data Link File



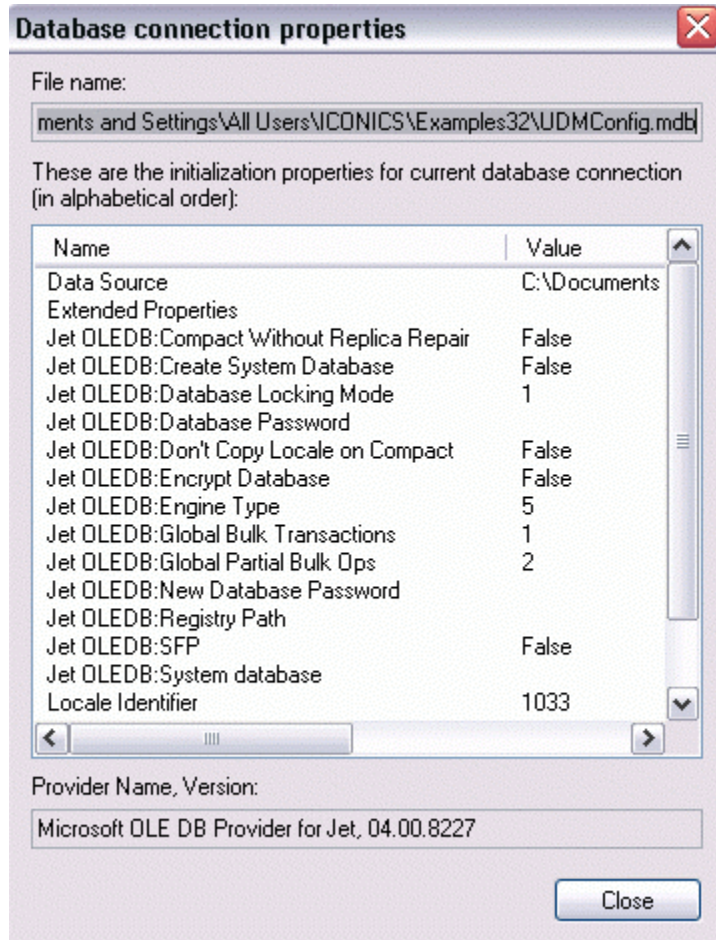
3. Click the **Finish** button.

The new database is connected and opened in the Configurator.

To view the current connection:

Select the **Connection Properties** from the **File** menu; the **Database Connection Properties** dialog box appears as shown below.

Database Connection Properties dialog box.

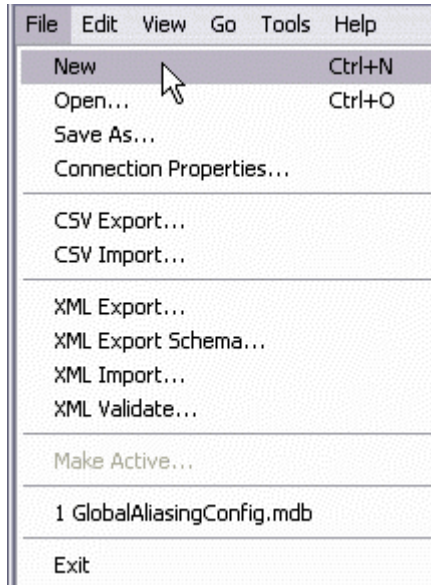


Adding a Configuration Database to an Existing SQL Server Database

The Configuration Database Wizard also gives you the option to add the configuration database structure to an existing Microsoft SQL Server database:

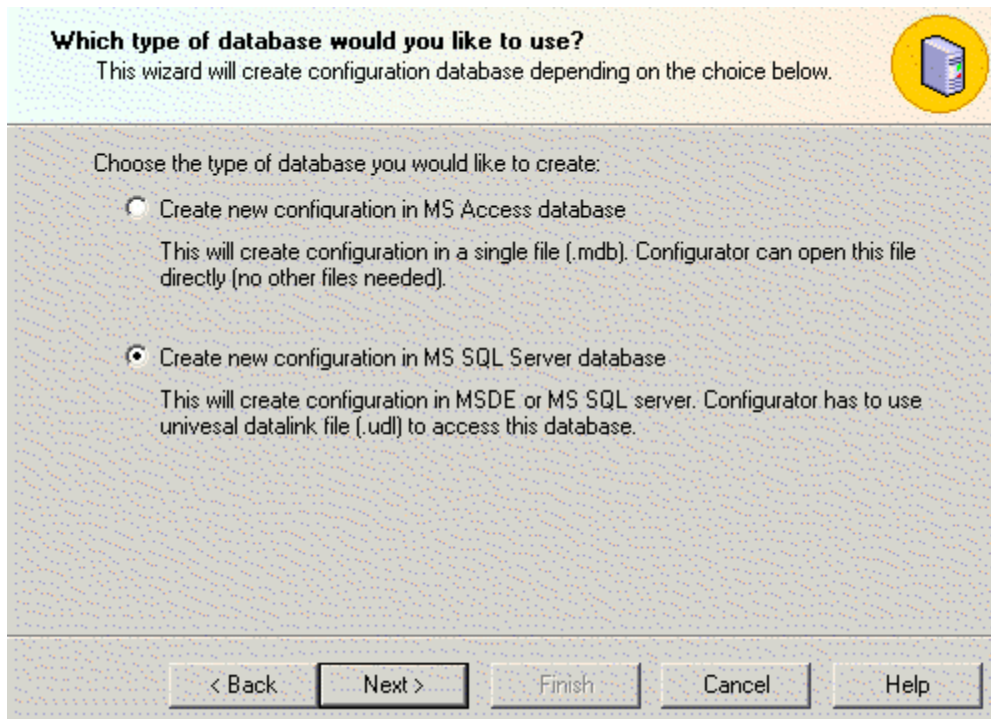
1. Select **New** from the **File** menu, as shown in the figure below.

Use the new command to create a configuration database.



2. The introduction screen for the Configuration Database Wizard appears. Click the **Next** button to continue.
3. Select the **Create new configuration in MS SQL Server database**; then click **Next** button.

Selecting the database type.



4. To connect to a SQL Server database, **select the existing database** from the drop-down list, as shown in the figure below.
5. Check to enable the **Auto-append configuration into existing database** check box.

6. In the **SQL Server** field, select the local SQL Server instance that will create and manage the database.
7. Type a name for the database in the **Database Name** field.

If necessary, enter a user name and password to log on to the SQL Server.

Note. It is recommended that you use Windows NT integrated security.) Click the **Next** button to continue

Usually you have only one instance of SQL Server running on the local node. In this case, the drop-down list under **SQL Server Name** has only one option: "(local)." However, it is possible to run multiple SQL Server instances on the local node, in which case the **SQL Server** field lists all those SQL Server instances: "(local)" for the default instance and "node_name/instance_name" for all others. The drop-down list may show SQL Server instances on other nodes as well.

Connecting to an Existing SQL Server Database

8. Set one of the following configuration options, as shown in the figure below:

Select a different database name (recommended): This option allows you to rename the database without affecting the existing database as well as create a new Data Link (.udl) file.

Use the existing database structure: This option preserves the content of the existing database and allows you to create a new Universal Data Link (.udl) file.

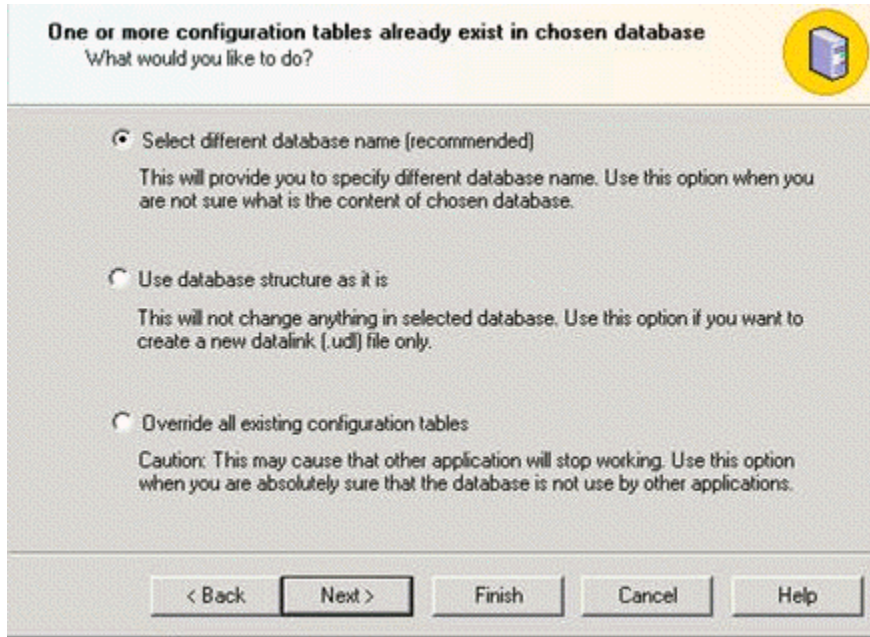
Override all existing configuration tables: This option expunges the content of the existing database and allows you to create a new Universal Data Link (.udl) file.

Caution: Overriding the database may disable other applications

that also use the database. Also, if you chose to **Use the existing database structure** or to **Override all existing configuration tables**, as described in the following steps you will still need to create a new Data Link file.

9. Click the **Next** button to continue.

Adding the Configuration to an Existing SQL Server Database



One or more configuration tables already exist in chosen database
What would you like to do?

☒ **Select different database name (recommended)**
This will provide you to specify different database name. Use this option when you are not sure what is the content of chosen database.

☐ **Use database structure as it is**
This will not change anything in selected database. Use this option if you want to create a new datalink (.udl) file only.

☐ **Override all existing configuration tables**
Caution: This may cause that other application will stop working. Use this option when you are absolutely sure that the database is not use by other applications.

< Back Next > Finish Cancel Help

Database Connections

If you chose **Select a different database name (recommended)** as shown above, you are directed back to the SQL Server Database Connection dialog box, shown in the figure below.

To establish a database connection:

1. Enter a new name for the database, and then click **Next**.

Renaming the Existing SQL Server Database

- Specify a **directory path location** in which to create the database, as shown in the figure below.

You can either use the default SQL Server database folder, or you can click the ... button and browse for a specific folder.

Specifying the Database Location and Properties

- Under the **Database Properties** section, specify an initial size for the database, which should be as large as possible.

You can also specify a **Database Growth** option (in megabytes) or

as a percentage of the total size. MSDE servers are capable of growing the database on the fly to store more data. However, if this operation is performed frequently, the overall system performance may decrease. Choosing an initially large database size and a corresponding database growth option can drastically improve system performance.

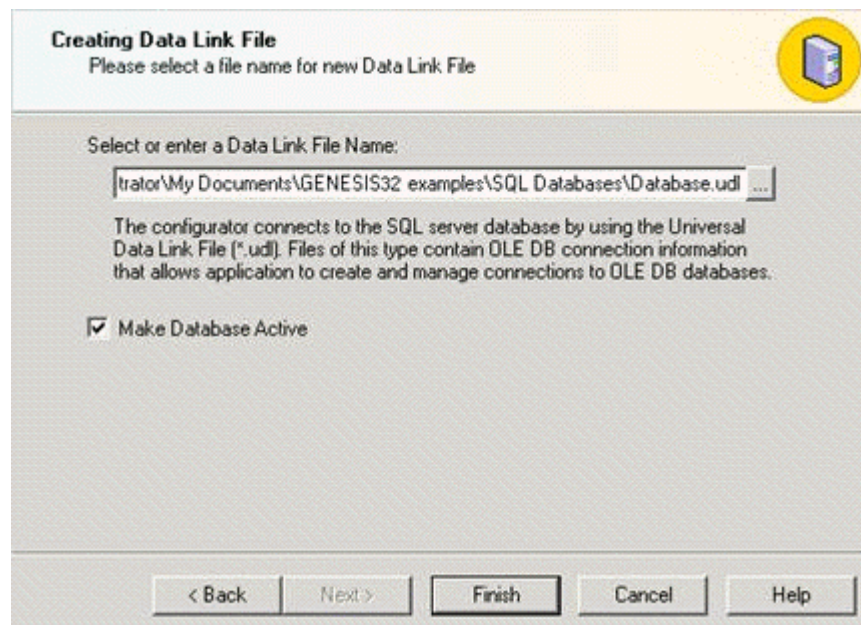
4. Under the **Log File Properties** section specify a **Log File Growth** option (in megabytes) or as a percentage of the total size (optional).

Again, a sufficient initial size setting can greatly improve performance. The default options should be adequate for most applications with a small to medium size load.

5. Click the **Next** button to create the new SQL Server database; then click the **Finish** button.

The new database is created and opened in the Configurator.

Creating a Universal Data Link File



The Configurator uses Universal Data Link (.udl) files to connect to the Microsoft SQL Server database. These .udl files contain OLE database connection information that allows the Configurator to create and manage connections to OLE databases. Enter a name and directory path for the new .udl file in the **Data Link File Name** field, as shown in the figure below. You can browse for a directory by clicking the ... button to the right of this field. Click the **Next** button to continue. If you want this new database to be the active configuration database, check **Make Database Active**.

Activating the Database

Once your configuration is complete, you need to make sure that it is the active database. The database that is currently active is the one that the server uses.

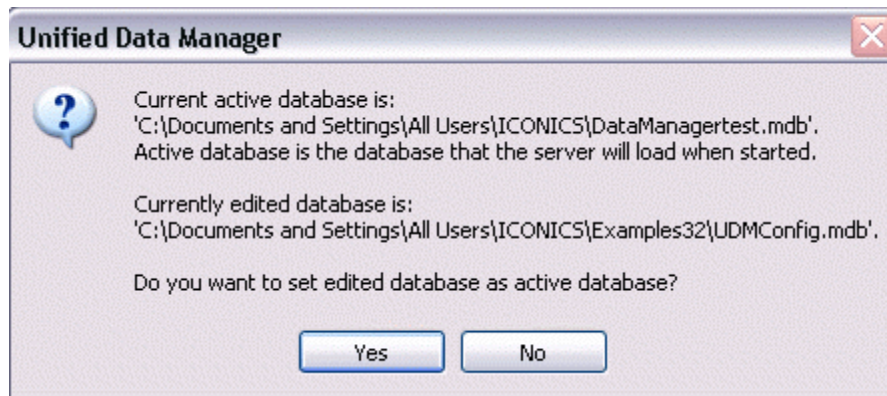
To make the current database active:

1. Select the Make **Active** command from the **File** menu.

If the **Make Active** command is grayed out, then the current database is already the active database.

The alert box appears show below shows the current active database and proposed database that will be activated.

Activating the Database



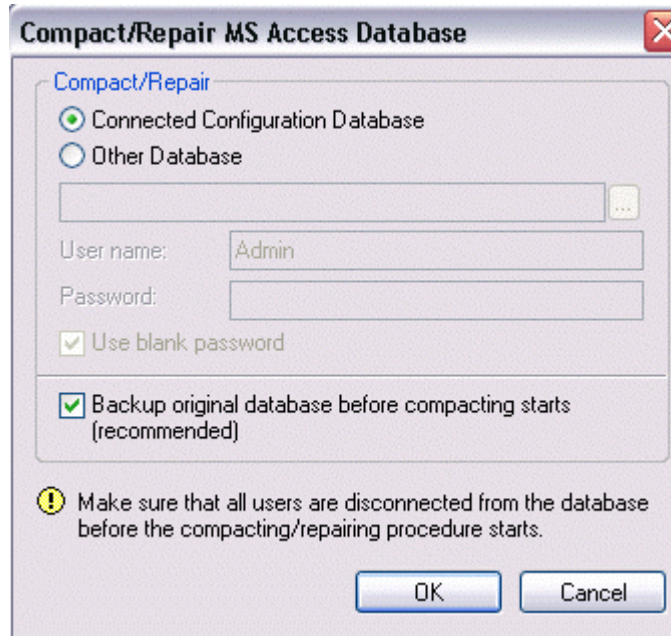
2. Click the **Yes** button to confirm the activation of your selected database.

Compacting and Repairing Microsoft Access Databases

You can compact Microsoft Access databases, which can be either configuration databases or historical databases, using the **Compact/Repair MS Access Database** dialog box, shown in the figure below. To open this dialog box, select **Compact/Repair MS Access Database** from the **Tools** menu. Microsoft Access-based databases are subject to database fragmentation over time, and the support for the database will compact the target database, reclaim unused space, and drastically improve database performance.

Note. It is critical that no users or client applications are connected to the database at the time of compacting and that, if the **Backup Original Database** option is selected, there is plenty of available hard disk space.

Compacting and Repairing Microsoft Access Databases



[Contents](#)

[Introduction](#)

[Getting Started](#)

[Finding and Replacing Items](#)

[Configuration Databases](#)

[Configuration Data](#)

[Preferences](#)

Configuration Data

The Unified Data Manager allows you to import and export data from a variety of data source. You can use Text, CSV, and XML files as your source or output. These operations allows you to:

- Save settings as a backup
- Use settings that applied at a different time or are from another source
- Send settings to others
- Work with settings inside other applications

The sections that follow detail how to perform exports and imports of configuration data.

Exporting Configuration Data

The Configurator offers the flexibility of exporting data from your configuration database to:

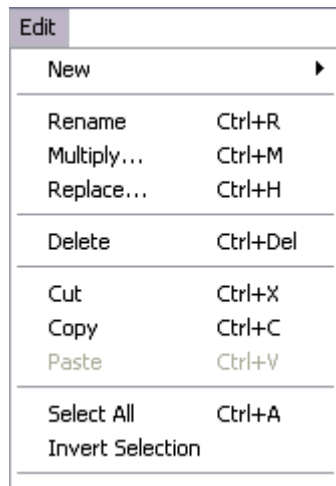
- **Text** (.TXT) files that can be opened in Notepad or a Word Processor
- **Comma Separated Values** (.CSV) that can be opened by Microsoft

Excel

- **Tab Separated Values** (.TSV) that can be opened by many databases.
- **XML Data** that can be opened in Microsoft Office 2007, browsers, and all text editors.
- **XML Schema** that can be opened in Microsoft Office 2007, some browsers, and in some text editors.

The file menu of the UDM contains import and export commands, as shown below.

The File menu from GENESIS32 v.9.10



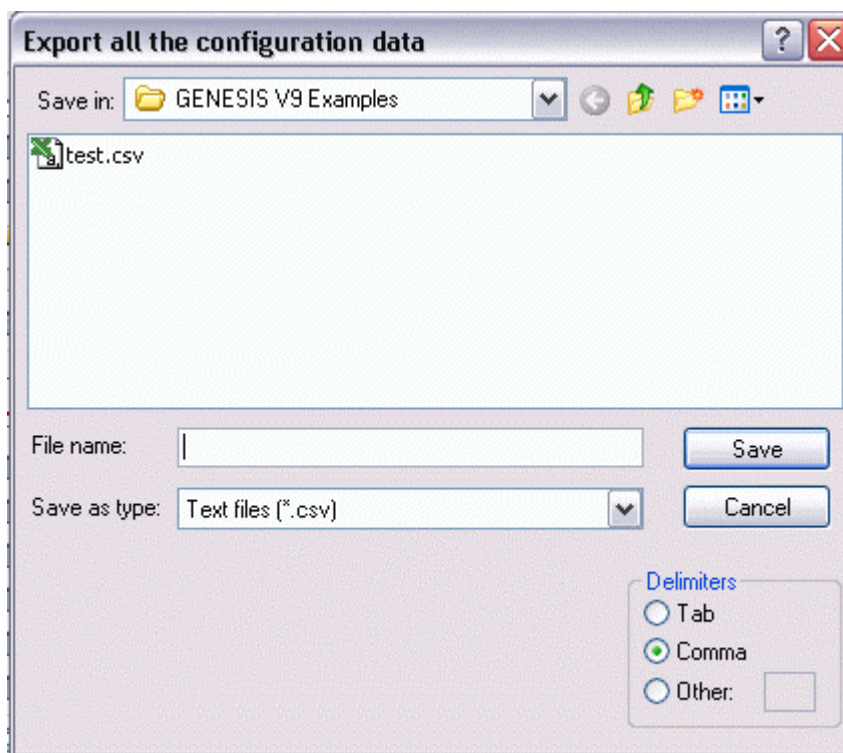
Export to CSV or TSV Files

To export CSV or TSV data from the UDM:

1. Select **CSV Export** command from the **File** menu.

This opens the **Export Configuration Data** dialog box, as shown in the figure below.

The Export all the configuration data dialog box.



2. Specify the **delimiters** for the exported data: Tab, Comma, or Other.
Commas are the default delimiter.
3. Select the **directory** to which you want to export the data from your database.
4. In the **Save As Type** field, choose the file type (.txt or .csv) that you would like to save.
5. Enter the **name** of your export file, then click the **Save** button.

Each export format contains a header row that provides information about each item, such as descriptions, associated translations, and expressions. It also provides the "tree" pathway for each item. Individual items are stored as lines or rows under the header row for that item type.

An edited portion of a CSV export file.



Exporting to an XML File

The Configurator also allows you to export data from your configuration database to an XML file, as well as an XML Schema that describes the meaning of the data in the form of metadata. Data and schema export are two different operations.

XML has the following advantages over the CSV import/export function:

- XML has a **standardized format**, unlike the text/CSV format, which uses various delimiters (e.g. TAB instead of commas, strings could not

accept all characters, etc.)

- XML is **language-independent**, whereas CSV converts date/time, floats, and currency fields according to local settings in Windows. For example, using CSV, you cannot export data on German Windows and import it on English windows without making changes
- Windows and Microsoft Office (Office 2007) have an installed automation object to **work with XML**. For older versions of applications such as Office 2003 or Internet Explorer 6 you can download utilities that extend support to XML.
- Programmers can **create / modify configurations** using Visual Basic, if desired.
- XML supports schemas. A **schema** is a special XML file that specifies the data structure of an XML data file.

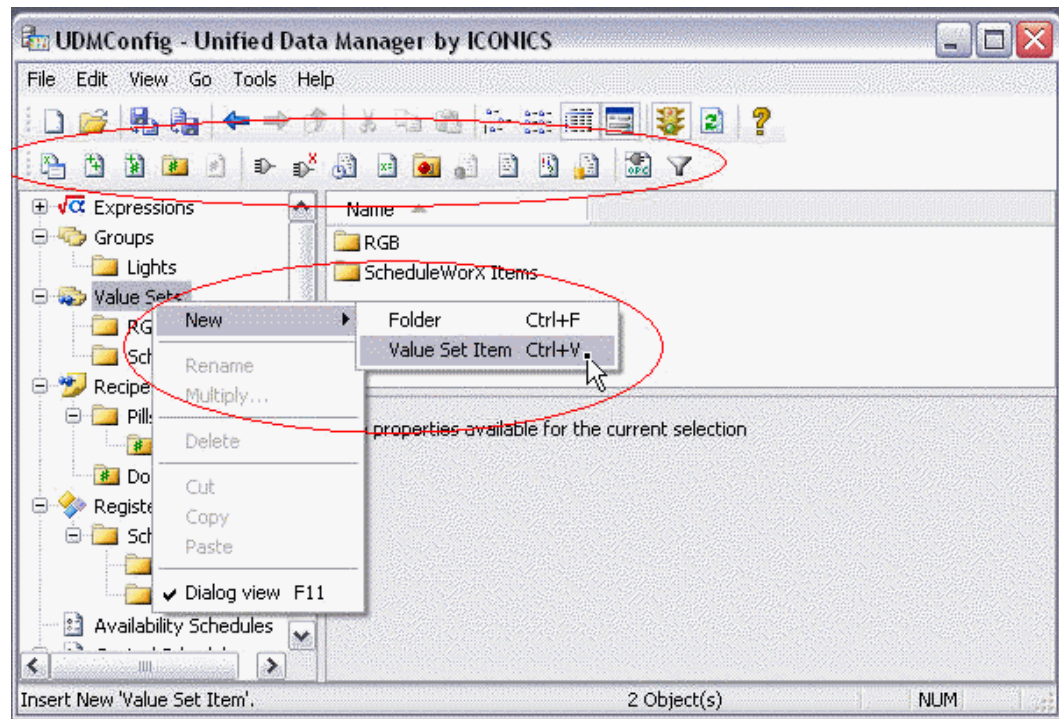
To export XML data:

1. Select **XML Export** command from the **File** menu.

This opens the **Export XML File** dialog box, as shown in the figure below.

2. Name the file, select the export directory; then click **Save**.

The Export XML File (save) dialog box.



The figure below shows the UDMConfig XML file opened inside Internet Explorer 7, which comes with XML support.

The XML output of the UDM as displayed in Internet Explorer 7.



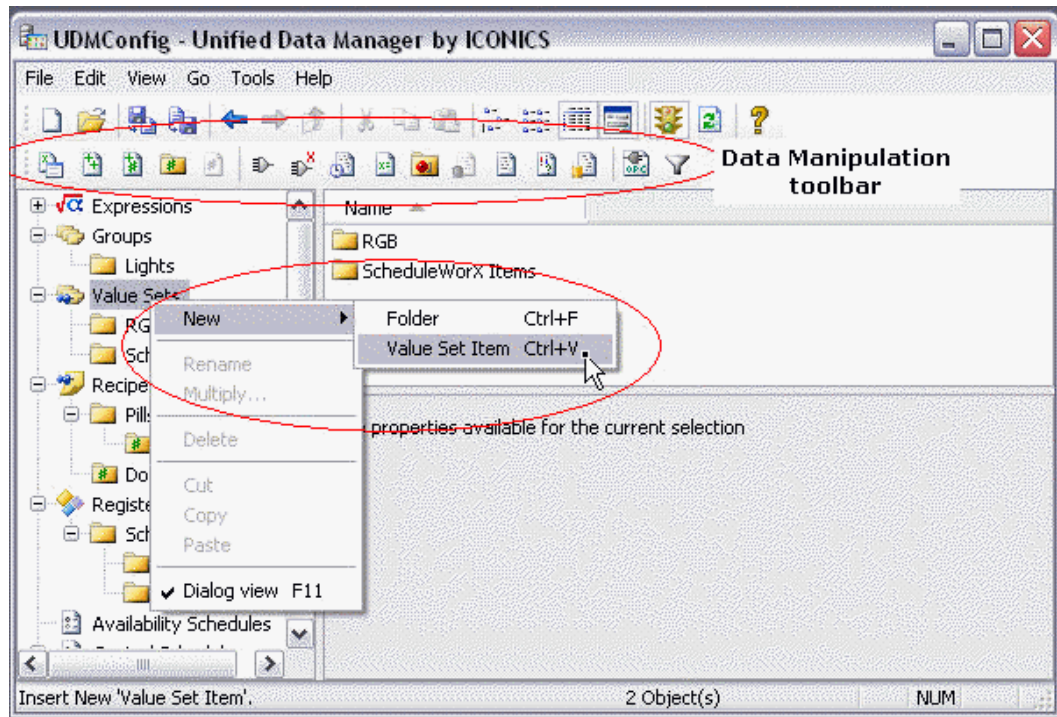
To export the XML schema:

1. Select the **XML Export Schema** command from the **File** menu.

This opens the **Export XML File** dialog box, as shown in the figure below.

2. Name the file, select the export directory; then click **Save**.

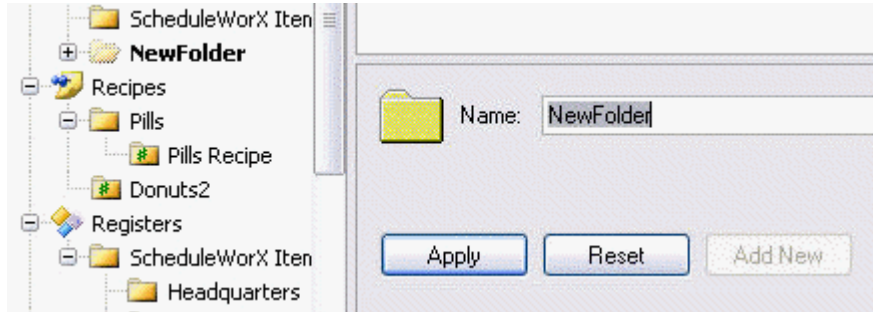
The Export XML File (save) dialog box.



The figure below shows a portion of the XML Schema opened inside Internet Explorer.

It's hard to get a sense for the organization of the schema in a direct listing such as the one shown above. To get a better idea of the schema hierarchy, open the file inside an XML editor such as Microsoft's XML Notepad. The figure belows shows an example of this display.

The UDM XML Schema inside Microsoft XML Notepad.



Microsoft XML Notepad is a freely distributed application that can be downloaded without registration from the [XML Notepad download page](#).

Importing Configuration Data

Just as you can export UDM data into a set of standard data interchange formats, you can also import data from these same formats. When you import data files the UDM offers additional options that let you manage the way in which the data is mapped into items.

Importing Data From a TSV or CSV File

To import data from a text file:

1. Select the **CSV Import** command from the **File** menu.

This opens the **Import Configuration Data** dialog box, shown below.

2. Specify the delimiters that were used in the data interchange file; then choose from the following import settings:

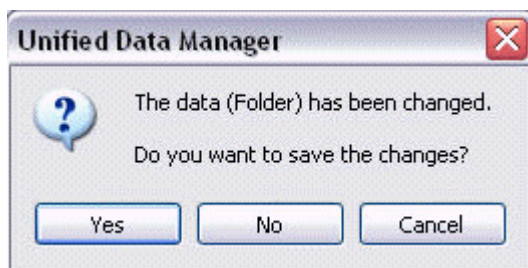
Create new items. When the import file contains items that are not yet in the configuration database, then it creates them. Otherwise it skips these items.

Update existing items. When the import file contains items that are in the configuration database, then it updates them using data from the import file. Otherwise it skips these items.

Display errors. When this item is checked, the Configurator shows a dialog box if an error occurs, and then asks you if you want to proceed with the import. When it is not checked, it skips all items where an error occurred.

Note. Either the **Create new items** or **Update existing items** must be selected. Without enabling either selection there is nothing to import.

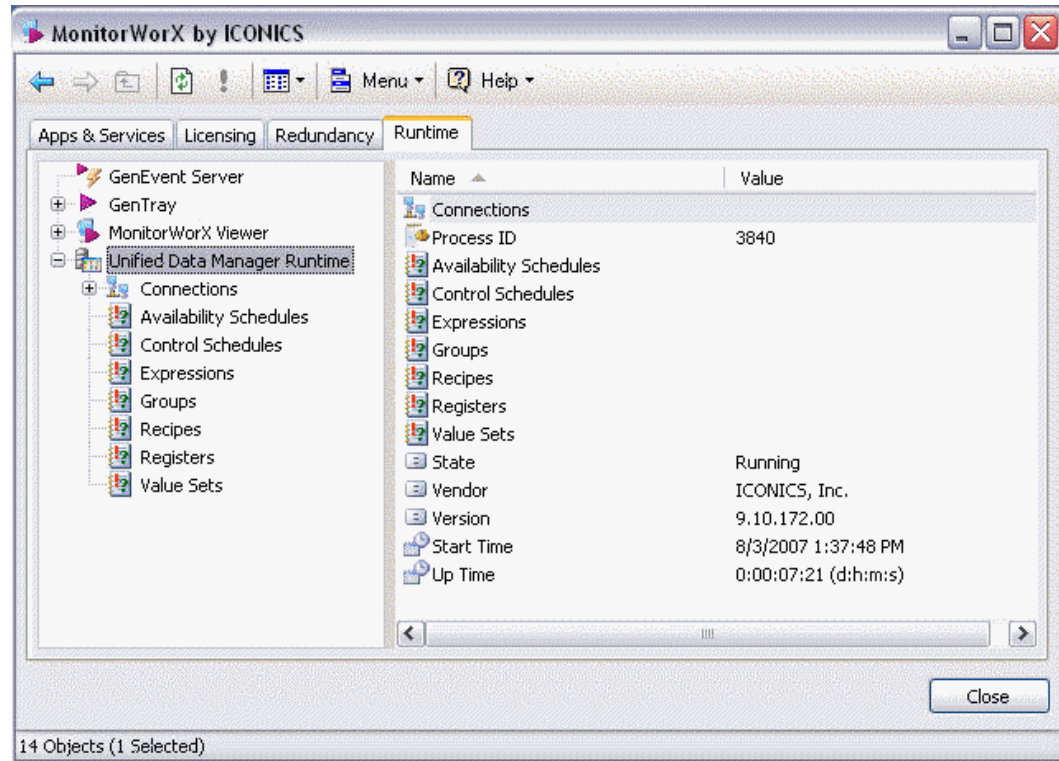
The Import Configuration from CSV file (open) dialog box.



3. Select a **file to import**; then click the **Open** button.

When the import is completed, the File Import Results dialog box opens, as shown in the figure below. This shows the import settings, including the input file name. It also provides a summary of the import, including how many items were inserted, updated, or rejected, and shows how many errors occurred.

File Import Results dialog box.



4. Click the ... button (Elipsis) to the right of each field to get the **details view** of the import results.
5. This view shows the specific items that were inserted, updated, or rejected, as well as a description of any errors that occurred. You can click the Save button to save a report of your import operations.

File Import Results Detail View Dialog Box

Importing Data From an XML File

The Configurator allows you to import data from your configuration database from an XML file.

To import XML data:

1. Select **XML Import** from the **File** menu.
2. In the **Import XML File** dialog box, shown below navigate to the folder containing the XML import data file, then select that file, then click the **Open** button.
3. Select **XML Validate** command from the **File** menu to validate the XML data file's structure using the stored XML schema (optional, but recommended).

Once it passes this validation, the XML file is acceptable for import by the Configurator.

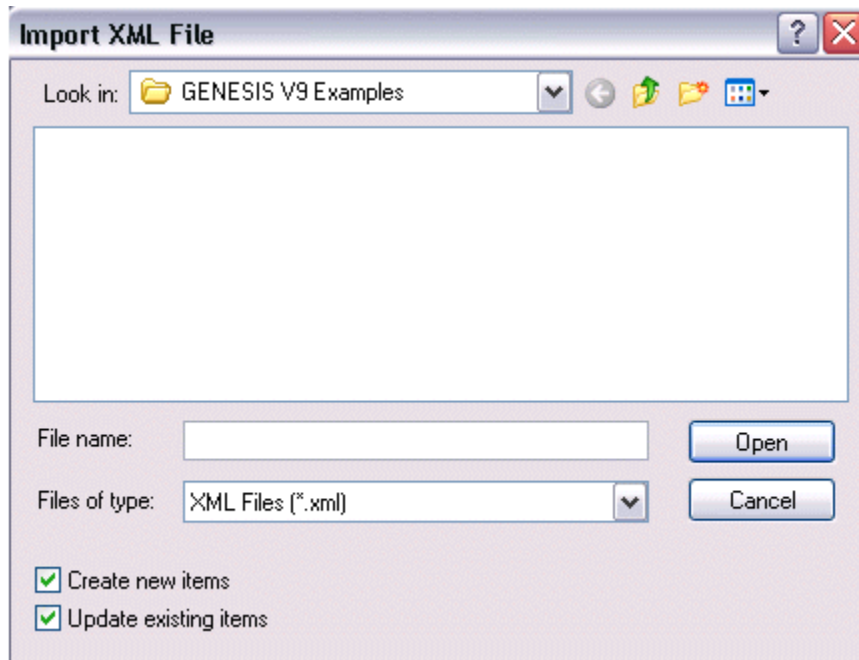
4. Click to enable either of the following options:

Create new items. When the import file contains items that are not yet in the configuration database, then it creates them. Otherwise it skips these items.

Update existing items. When the import file contains items that are in the configuration database, then it updates them using data from the import file. Otherwise it skips these items.

Note. Either the **Create new items** or **Update existing items** must be selected. Without enabling either selection there is nothing to import.

Importing Configuration Data From an XML File



5. Click the Open button to perform the XML data import.

[Contents](#)

[Introduction](#)

[Getting Started](#)

[Finding and Replacing Items](#)

[Configuration Databases](#)

[Configuration Data](#)

[Preferences](#)

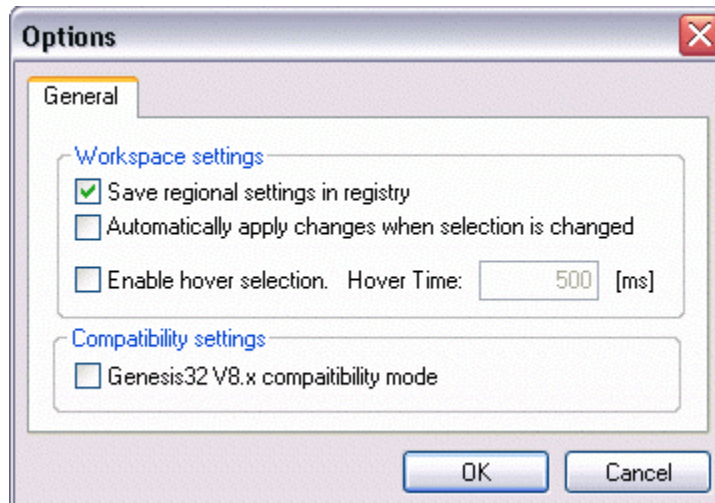
Preferences

The UDM has options that let you control the way in which data is saved to the registry, as well whether modified or new data values are autosaved or require user intervention prior to being saved. There are also settings that control the languages used, as well as localities. Localities control how financial and date/time information is formatted.

Options Dialog Box

To choose additional settings, select the Options command from the Tools menu. This opens the Options dialog box, shown in the figure below.

The General Tab of the Options dialog box.



The Workspace Settings section has the following options:

- **Save regional settings in registry:** Checking this option allows you to save regional settings in the registry so that they are applied each time you start the configuration application. This applies to the language settings as well as time and date settings.
- **Automatically apply changes when selection is changed:** Checking this option allows changes to the configuration database to be saved each time you switch dialogs without clicking on the **Apply** button or being shown a message asking if you would like to apply changes.
- **Enable hover selection:** Checking this option allows you to highlight an item by moving the mouse pointer over that item and keeping it there for a specified amount of time (in milliseconds).

The Compatibility Settings section lets you set:

- **GENESIS32 V8.x Compatibility Mode.** Enable this check box to configure periodic triggers, which are hidden in version 9.x by default.

Selecting Languages

The **Select Language** function on the View menu allows you to choose which language to use in your display. Choosing Select Language from the View menu opens the Select Language dialog box, shown in the figure below.

Note. A language resource .dll is required for language switching.

Select Language dialog box.



The Select Language Parameters table shown below describes the different settings found in this dialog box.

Select Language Parameters

Parameter	Description
List	Lists available languages. Depending on which item you have selected, the view on the left will change. If English is checked, the languages will appear as their English name. If Localized is checked, the languages will appear with the native country in parentheses (for languages with several dialects only). When Native is checked, the languages are displayed the way they would be written in that language.
Installed Locales Only	If this is checked, local languages appear in the box.
Available Language Translations Only	Checking this box allows you to choose from available language translations only.

[Contents](#)

[Introduction](#)

[Getting Started](#)

[Finding and Replacing Items](#)

[Configuration Databases](#)

[Configuration Data](#)

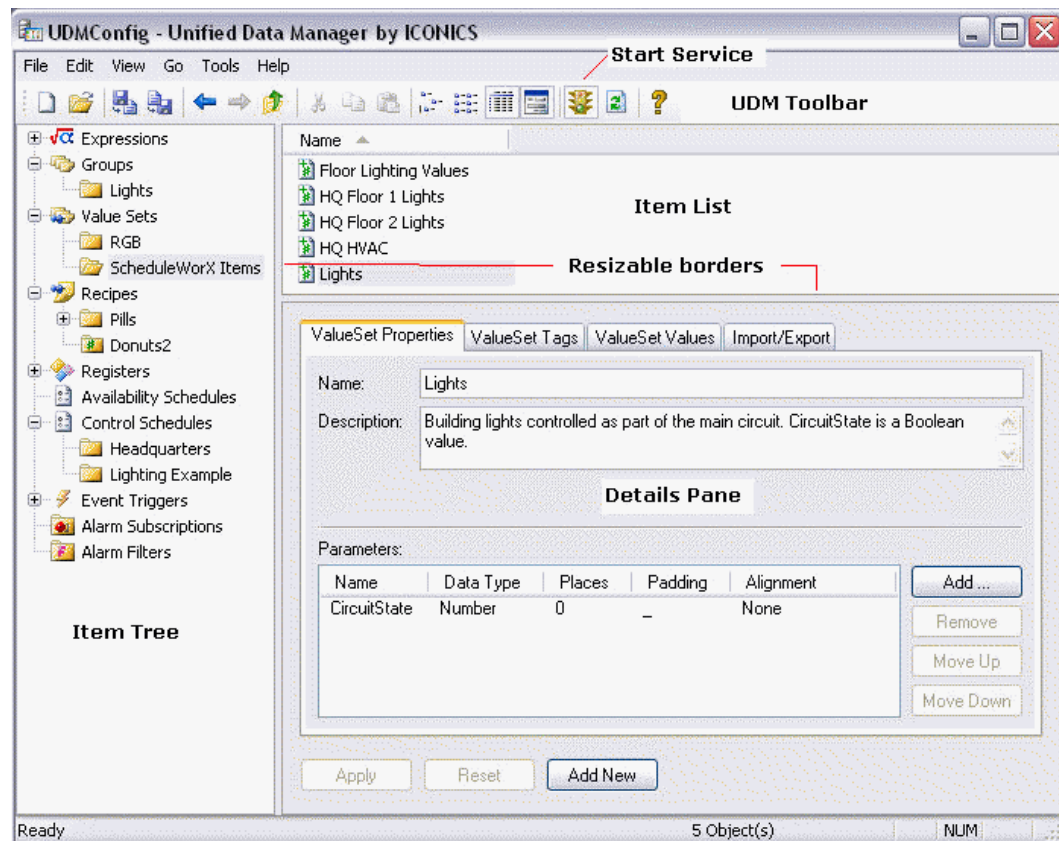
[Preferences](#)

User Interface

User Interface

The Unified Data Manager is a three pane window that allows you to select items from a tree or detail view and assign properties to the selected item. You can resize the borders of the panes to expand your view of any of the three panes, as required.

The Unified Data Manager Interface



[Contents](#)

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)

[View Menu](#)

[Go Menu](#)

[Tools Menu](#)

[Help Menu](#)

Toolbars

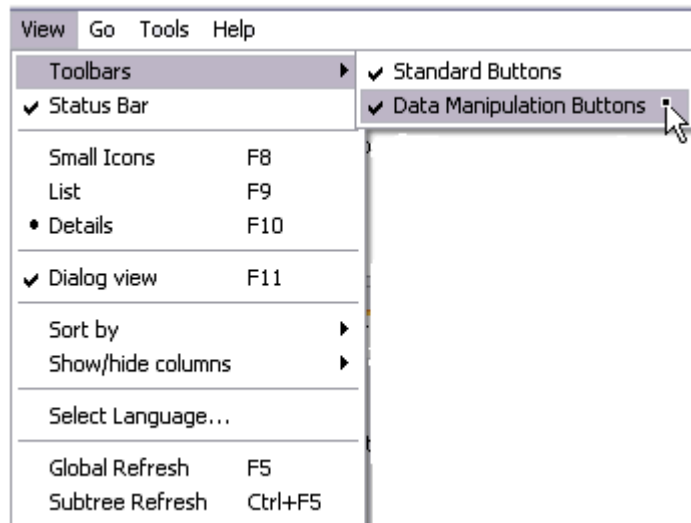
The Configurator contains the following toolbars:

- Standard toolbar
- Data Manipulation toolbar

To show or hide a toolbar:

Click on the **View** menu, then **Toolbars**. and select either the **Standard Buttons** or **Data buttons** command, as shown below.

The Toolbar View command.



A check mark indicates that the toolbar is in view. Toolbars can be docked below the menu bar, or can float freely within the UDM workspace.

Standard Toolbar

The **Standard** toolbar is shown below; the following table explains each buttons function.

The Standard toolbar shown as a floating window.



Standard toolbar button functions.

Icon	Description
	New: Creates a new configuration database.
	Open: Opens an existing configuration database.
	Import: Imports configuration data from a text file (.txt) or a Microsoft Excel file (.csv).
	Export: Exports configuration data to a text file (.txt) or a Microsoft Excel file (.csv).
	Back: Moves the cursor back to the previously selected item in the tree control.
	Next: Moves the cursor to the next item in the tree control.
	Up One Level: Moves up one level in the tree control.
	Cut: Deletes current selection, sending it to the clipboard.
	Copy: Copies the current selection to the clipboard.
	Paste: Pastes the current contents of the clipboard.
	Small Icons: Displays items using small icons.
	List: Displays items as a list.
	Details: Displays items as a list with details.
	Dialog View: Displays additional configuration options.
	Start/Stop Service: Turns the UDMRuntime on and off.
	Global Refresh: Refreshes the data for the entire Configurator screen.
	About: Displays information about the application.

Data Manipulation Toolbar

The Data Manipulation toolbar is shown below; the following table explains each buttons function.

Data Manipulation toolbar shown as a floating window.



Data Manipulation toolbar button functions.

Icon	Description
	New Expression: Creates a new expression item.
	New Group: Creates a new group item.
	New ValueSet: Creates a new ValueSet item.
	New Recipe: Creates a new recipe under the Recipes tree control.
	New Recipe Item: Creates a new recipe item for the selected recipe.
	New Event Group: Creates a new event group item.
	New Event Switch: Creates a new event switch item.
	New Date/Time Trigger: Creates a new time trigger item.
	New Data Trigger: Creates a new data trigger item.
	Alarm Trigger Subscription: Creates a new alarm trigger subscription.
	New Alarm Trigger: Creates a new alarm trigger item.
	New File Trigger: Creates a new file trigger item.
	New NT Event Trigger: Creates a new NT event trigger item.
	New Database Trigger: Creates a new database trigger item.
	New Alarm Subscription: Creates a new alarm subscription item.
	New Alarm Filter: Creates a new alarm filter item.

[Contents](#)

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)

[View Menu](#)

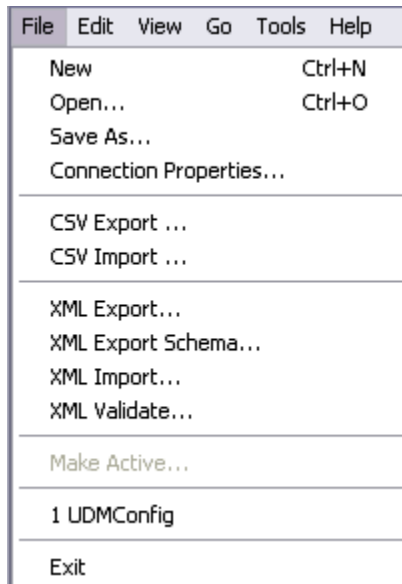
[Go Menu](#)

[Tools Menu](#)

[Help Menu](#)

File Menu

File menu



File menu commands are listed in the table below.

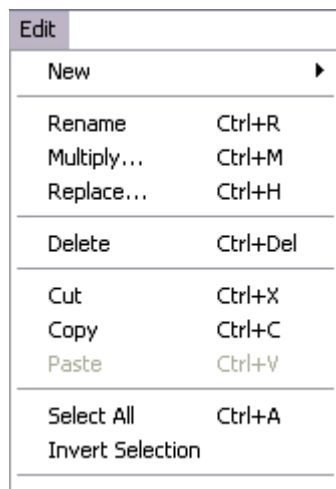
Command	Shortcut Key	Function
New	CTRL+N	Creates a new configuration database.
Open	CTRL+O	Opens an existing configuration database.
Save As		Saves the current database under a different name as a Microsoft Access (.mdb) file.
Connection Properties		Displays the current database connection properties.
CSV Export		Exports configuration data from your database to a text file (.txt) or a Microsoft Excel file (.csv). You can specify the delimiters and what to export.
CSV Import		Imports data into your configuration database from a text file (.txt) or a Microsoft Excel file (.csv). You can then specify the delimiters and choose from the import settings.
XML Export		Exports configuration data to an XML file.
XML Export Schema		Exports configuration data to an XML Schema file.
XML Import		Imports configuration data from an XML file.
XML Validate		This feature does not import an XML data file, but it will try to validate its structure using stored XML schema. Once it passes this validation, the XML file is acceptable for import by the Configurator.
Make Active		Activates the current database. If this command is not available, then the current database is already the active database.
Exit		Closes the application.

[Contents](#)

[User Interface](#)[Toolbars](#)[File Menu](#)[Edit Menu](#)[View Menu](#)[Go Menu](#)[Tools Menu](#)[Help Menu](#)

Edit Menu

The Edit menu.



Edit Menu Commands

Command	Shortcut Keys	Function
New		Creates a new item depending on what is selected in the tree control.
Rename	CTRL+R	Renames the selected item.
Multiply	CTRL+M	Opens the Multiply Item dialog box, which allows you to multiply an item in the tree control.
Find and Replace	CTRL+H	Opens the Find and Replace dialog box. Enter a string to search for in the Find What field. The Replace operation works in a similar way and replaces the Find What string(s) with the Replace With string(s). All dialog options are the same, except that the Replace dialog box has a field called Replace With .
Delete	CTRL+DEL	Deletes the selected object.
Cut	CTRL+X	Cuts the selected object from the view and places it on the clipboard.
Copy	CTRL+C	Copies the selected object to the clipboard.
Paste	CTRL+V	Pastes the last object placed on the clipboard.
Select All	CTRL+A	Selects all objects in a list. The selection is shown in the upper-right-hand section of the viewer.
Invert Selection		Unselects all selected items and selects all unselected items in a list in the upper-right-hand section of the viewer.

[Contents](#)

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)

[View Menu](#)

[Go Menu](#)

[Tools Menu](#)

[Help Menu](#)

View Menu

The View menu.



View Menu Commands are listed in the table below

Command	Shortcut Keys	Function
Toolbars		Toggles the toolbars.
Status Bar		Toggles the status bar.
Small Icons	F8	Displays items using small icons.
List	F9	Displays items as a list.
Details	F10	Displays items as a list along with detailed information about the configuration of each item.
Dialog View	F11	Toggles the configuration window (right-hand pane).
Sort By		Displays a list of options for sorting the columns in the right-hand pane of the screen. The options listed depend on the level within the view.
Show/Hide Columns		Displays a list of options that you can choose to show or hide in the view.
Select Language		Opens the Select Language dialog box (see below). Choose the language you wish to use for your system (Unicode version only) and click OK . For navigation purposes, use the buttons and check boxes in the List section.
Global Refresh	F5	Refreshes the data for the entire Configurator screen.
Subtree Refresh	CTRL+F5	Refreshes only the data contained in the currently selected subtree.

[Contents](#)

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)[View Menu](#)[Go Menu](#)[Tools Menu](#)[Help Menu](#)**Go Menu****The Go menu.**

Go	-
Back	Ctrl+Alt+Left Arrow
Forward	Ctrl+Alt+Right Arrow
Up One Level	
Next Item	Alt+Down Arrow
Previous Item	Alt+Up Arrow
Expand Item	Alt+Left Arrow
Collapse Item	Alt+Right Arrow
Page Up	Alt+PgUp
Page Down	Alt+PgDn
Home	Alt+Home
End	Alt+End
Next Pane	F6
Previous Pane	Shift+F6

The Go Menu Commands

Command	Shortcut Keys	Function
Back	CTRL+ALT+Left Arrow	Moves the cursor back to the previously selected item in the tree control.
Forward	CTRL+ALT+Right Arrow	Moves the cursor forward to the previously selected item in the tree control.
Up One Level		Moves the cursor up one level in the tree control.
Next Item	ALT+Down Arrow	Moves the cursor to the next item down in the tree control.
Previous Item	ALT+Up Arrow	Moves the cursor to the next item up in the tree view.
Expand Item	ALT+Left Arrow	Expands an item that contains a submenu.
Collapse Item	ALT+Right Arrow	Collapses an item that contains a submenu.
Page Up	ALT+PgUp	Moves the cursor up to the first item in the tree.
Page Down	ALT+PgDown	Moves the cursor down to the last visible item in the tree.
Home	ALT+Home	Moves the cursor up to the first item in the tree.
End	ALT+End	Moves the cursor down to the last visible item in the tree.
Next Pane	F6	Moves the cursor to the next pane.
Previous Pane	SHIFT+F6	Moves the cursor to the last pane used.

[Contents](#)

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)

[View Menu](#)

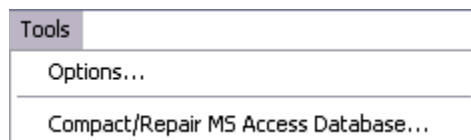
[Go Menu](#)

[Tools Menu](#)

[Help Menu](#)

Tools Menu

The Tools menu.



The Tools Menu Commands

Command	Function
Options	Launches the Options dialog box.
Compact/Repair MS Access Database	Opens the Compact/Repair MS Access Database dialog box.

[Contents](#)

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)

[View Menu](#)

[Go Menu](#)

[Tools Menu](#)

[Help Menu](#)

Help Menu

The Tools menu.

Help
Help Topics
About Application...

The **Help** menu commands are listed in the table below.

Command	Shortcut Key	Function
Help Topics	F1	Launches the online Help for the Configurator.
About Application		Launches the About Box , which contains information about the product version number, copyright, and available disk space. It also contains contact information.

[Contents](#)

[User Interface](#)

[Toolbars](#)

[File Menu](#)

[Edit Menu](#)

[View Menu](#)

[Go Menu](#)

[Tools Menu](#)

[Help Menu](#)

Expressions

Expressions

A global expression allows combining of miscellaneous data tags in a simple expression. Each global expression is implemented as a single expression data tag. Its re-calculation will be based on input values or on trigger data tags. Client applications can access these expression data tags as read/write data tags with a configured data type.

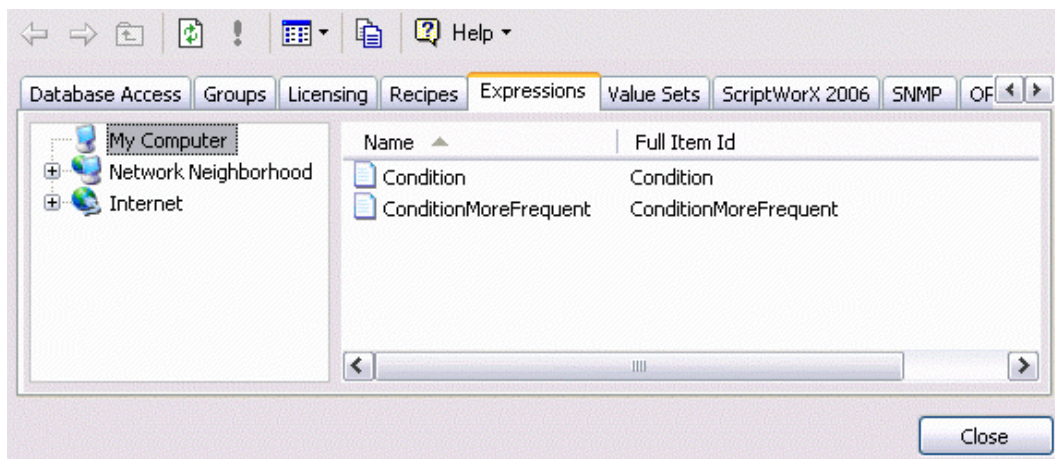
The **Expressions** tree control in the Unified Data Manager enables you to set up global expressions. Global expressions are organized in a tree structure of folders and expression items. Features of global expressions include:

- Create and edit expressions.
- Create folders for expressions.
- Expressions are available as data tags.
- Parameters are supported.
- Specify read expressions or write expressions.
- Expressions within expressions are calculated together.

Note. For more information about expressions, please refer to the Expression Editor help documentation.

Once you have configured global expressions, they can be accessed from many applications via the appropriate tab in the Unified Data Browser, as shown in the figure below.

Selecting Global Expressions from the Unified Data Browser

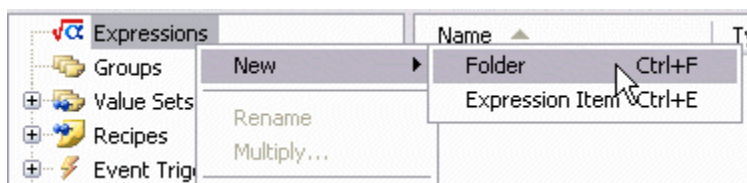


Creating a New Expression Folder

Expressions are organized in a tree structure of folders and expression tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new expression folder:

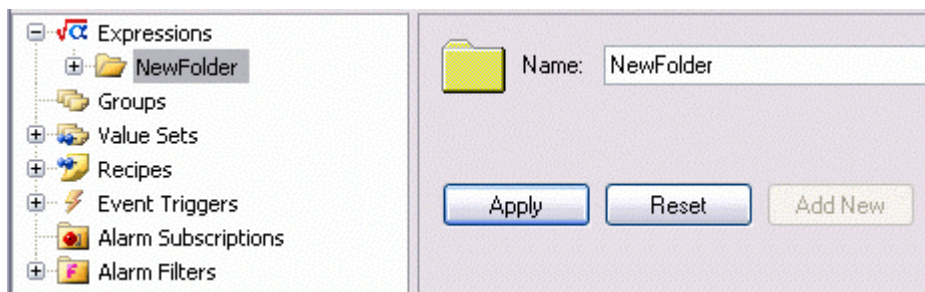
1. Right-click on the **Expressions** tree control of the Configurator and select **New**, then select the **Folder** command from the context menu, as shown in the figure below.

Creating a New Expression Folder



The properties dialog for the new expression folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Expression Folder



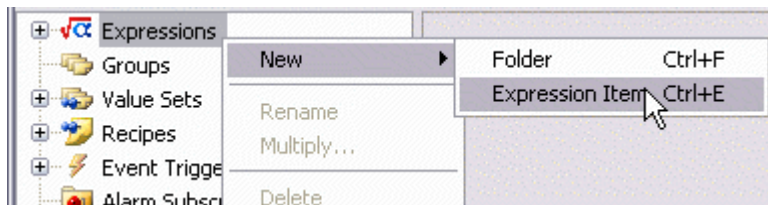
2. In the **Name** field, type a name for the new folder.
3. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Expressions** tree control.

Creating a New Expression Item

To create a new expression item:

1. Right-click on the **Expressions** tree control of the Configurator and select **New > Expression Item** from the pop-up menu, as shown in the figure below.

Creating a New Expression Item



2. The properties dialog for the new expression item appears in the right-hand pane of the Configurator, as shown in the figure below. This dialog contains the following tabs, which are described in the sections below:

Expression Properties

Read Expression

Write Expression

Setting the Properties for the New Expression Item

3. In the **Name** field of the **Expression Properties** tab, type a name for the new expression.
4. In the **Description** field of the **Expression Properties** tab, you can type an optional description for the new expression.
5. When you have finished configuring expression properties, click the **Apply** button.

The new expression appears under the **Expressions** tree control.

[Contents](#)

[Expressions](#)

[Expression Item Properties](#)

Expression Item Properties

The properties dialog for expression items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Expression Properties
- Read Expression
- Write Expression

Expression Item Properties

Expression Properties

In the **Expression Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the expression.
- **Description:** Enter a description for the expression (optional).
- **Data Type:** Each expression must have a data type that will be used as an output data type. In the case the output value cannot be converted into this configured data type it will report an error and will return bad quality. Select from the following data types: Native/Empty, Float, Double, Boolean, Byte, Word, DWord, Character, Short, Long, String.
- **Default Scan Rate:** Specify the default scan rate (in milliseconds) for all input and trigger data tags. This value can be overridden for particular data tags by using point extension syntax.
Note: For more information about point extension syntax, please refer to the Expression Editor help documentation.
- **Parameters:** Parameters are client-driven, and they do not change the number of requested data tags in runtime. Parameters can replace parts of data tag names by values passed in the expression data tag name. Each parameter can be an integer or a string data type with optional formatting. Click the **Add** button to select add a parameter to the list. Once the parameter tag is added to the list, you can click the **Remove** button to delete the parameter from the list, or you can click the **Move Up** and **Move Down** buttons to change the order of the parameter in the list. For more information about parameters, please see the "Parameters" section below.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new expression to be configured.

Expression Properties

Expression Properties | Read Expression | Write Expression

Name: Condition

Description:

Data Type: NATIVE | Default Scan Rate (ms): 100

Parameters:

Name	Data Type	Places	Padding	Alignment

Add ...

Remove

Move Up

Move Down

Apply | Reset | Add New

Parameters

Each data tag may support parameter(s) that could modify names of the data tags. Each parameter can be integer or string data type with optional formatting. The table below shows possible formatting for each supported data type:

Parameter Types

Data Type	Formatting
Integer (number)	Minimum number of digits used for character representation of an integer number and padding character.
String	Minimum number of characters and padding character plus padding direction (add padding characters from left or right side).

The client application passes configured parameter values as a part of the full data tag name. Parameters are client driven, and they do not change the number of requested data tags in runtime. Parameters can be integer or string values. These values are then formatted using preconfigured format data, and then they replace specific parts of a data tag name by values passed in the data tag name. Parameters are delimited with specific characters (e.g. << and >>) and specified by their names (e.g.

ICONICS.Simulator.1\SimulatePLC\Ramp<<Parameter1>>) in the data tag name.

Read Expression

A read expression must be compliant with the ICONICS expression syntax. In runtime it is processed by the standard ICONICS expression engine. The expression can be recalculated and triggered in two basic ways:

- When at least one trigger data tag is changed
- When any data expression input changes

In the **Read Expression** tab, shown in the figure below, configure the following settings:

- **Read Expression:** Click the **Expression Editor** button to create an expression, or type the expression text directly into the edit box.
- **Expression Editor:** Launches the **Expression Editor**, which is available to assist you in creating your expression.
Note: For more information about the Expression Editor, please refer to the Expression Editor help documentation.
- **Insert Tag:** Launches the **Unified Data Browser**, which enables you to choose tags from connected OPC servers and databases,
Note: For more information about the Unified Data Browser, please refer to the Unified Data Browser help documentation.
- **Use Trigger Tags:** Checking this check box enables you to specify a set data tags that may trigger an expression calculation.
- **Send Initial Update:** When you subscribe to the expression data tag, you get the value of the tag immediately.
- **Send All Updates:** Every time the expression is recalculated, the expression engine for the Unified Data Manager will send the new value to the client.

Trigger Tags: Click the **Add** button to select a list of data trigger tags from the Unified Data Browser. Once the selected tag is added to the list, you can click the **Remove** button to delete the tag from the list, or you can click the **Edit** button to change the tag.

The data trigger executes an event on any data tag change, or when the specified data tag changes to TRUE or FALSE. Under the **Method** column (next to the tag name), specify execution on **Change, True,** or **False** for each tag in the list.

Read Expression

Write Expression

Optionally each expression can be writable with certain limitations. Similarly to read expression, the write expression has to be compliant with the ICONICS expression syntax. Write expressions allow one output data tag only. They can use as inputs the written value and any number of other input data tags. In the **Write**

Expression tab, shown in the figure below, configure the following settings:

- **Enable Write Expression:** You must check this check box to create and edit write expressions.
- **Write Expression:** Click the **Expression Editor** button to create an expression, or type the expression text directly into the edit box.
- **Expression Editor:** Launches the **Expression Editor**, which is available to assist you in creating your expression.
Note: For more information about the Expression Editor, please refer to the Expression Editor help documentation.
- **Insert Tag:** Launches the **Unified Data Browser**, which enables you to choose tags from connected OPC servers and databases,
Note: For more information about the Unified Data Browser, please refer to the Unified Data Browser help documentation.
- **Output Tag:** Write expressions allow one output data tag only. Click the ... button to select a tag from the Unified Data Browser.

Write Expression

The screenshot shows the 'Write Expression' tab of the GENESIS32 Unified Data Manager. The tab is active and displays the following elements:

- Enable Write Expression:** A checked checkbox.
- Write Expression:** A large text area for entering the expression.
- Expression Editor ...:** A button to launch the Expression Editor.
- Insert Tag...:** A button to launch the Unified Data Browser.
- Output Tag:** A label followed by a text box and a button with three dots (...).
- Buttons:** 'Apply', 'Reset', and 'Add New' at the bottom.

[Contents](#)

[Expressions](#)

[Expression Item Properties](#)

Groups

Groups

Grouping simplifies work with a large set of data tags. The **Groups** tree control in the Unified Data Manager enables you to set up groups of data tags. Features of groups include:

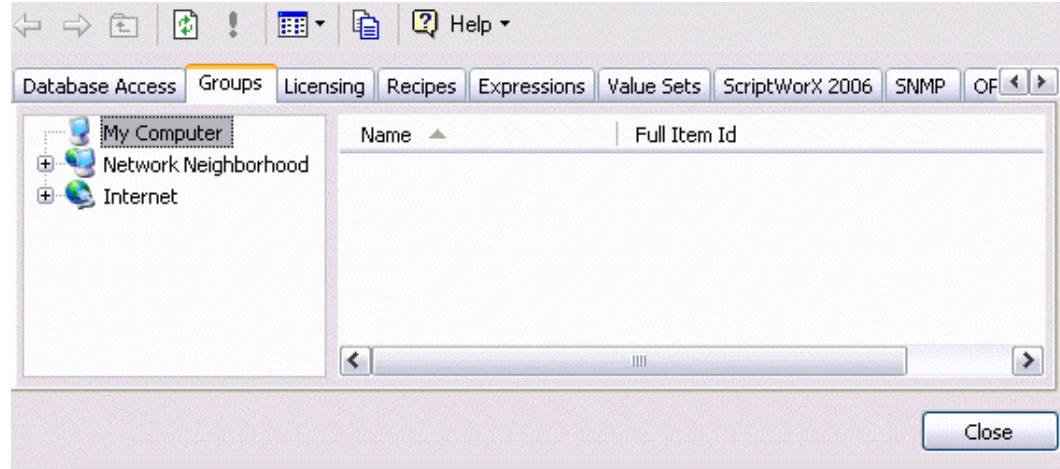
- Create and edit groups.
- Create folders for groups.
- Groups are available as read/write data tags.
- Parameters are supported.
- Groups within groups are allowed.
- Group values are written synchronously to target OPC servers

Grouping allows you to write a single variant value to a group of data tags. Each group of tags is represented by a **group data tag**. Group data tags are organized in a tree structure of folders and group items. Since each group is represented as a data tag, a group data tag may also be included in other groups.

Any write to a group data tag will distribute written values to all data tags included in the group; all included data tags will have the same value as the group data tag.

Once you have configured groups, they can be accessed from many applications via the appropriate tab in the Unified Data Browser, as shown in the figure below.

Selecting Groups from the Unified Data Browser

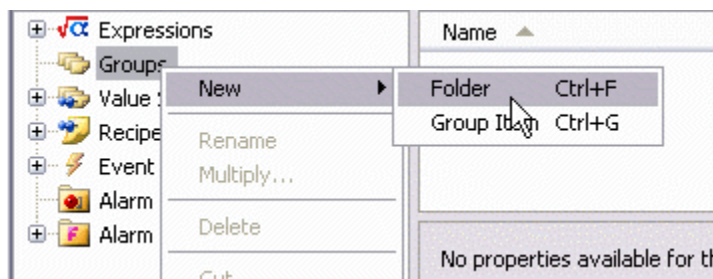


Creating a New Group Folder

Groups are organized in a tree structure of folders and group tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new group folder:

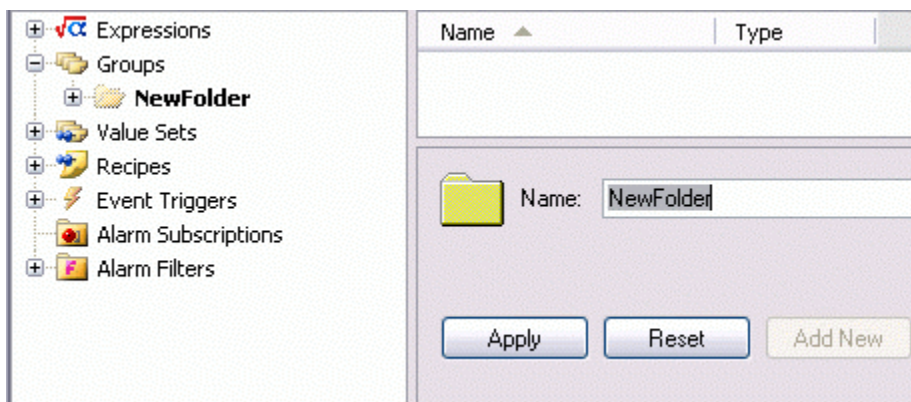
1. Right-click on the **Groups** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New Group Folder



The properties dialog for the new group folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Group Folder



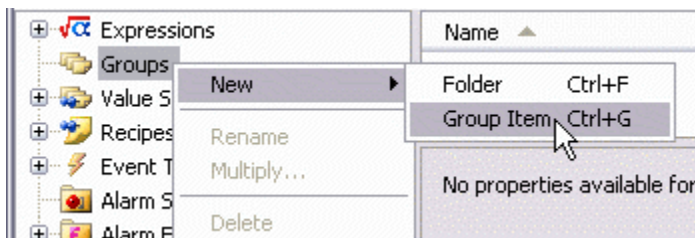
2. In the **Name** field, type a name for the new folder.
3. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Groups** tree control.

Creating a New Group Item

To create a new group item:

1. Right-click on the Groups tree control of the Configurator and select **New > Group Item** from the pop-up menu, as shown in the figure below.

Creating a New Group Item



2. The properties dialog for the new group item appears in the right-hand pane of the Configurator, as shown in the figure below. This dialog contains the following tabs, which are described in the sections below:

Group Properties

Grouped Tags

Setting the Properties for the New Group Item

Group Properties Grouped Tags

Name: NewGroup

Description:

Data Type: FLOAT

Parameters:

Name	Data Type	Places	Padding	Alignment

Add ...

Remove

Move Up

Move Down

Apply Reset Add New

G00112.bmp}

3. In the **Name** field of the **Group Properties** tab, type a name for the new group.
4. In the **Description** field of the **Group Properties** tab, you can type an optional description for the new group.
5. When you have finished configuring group properties, click the **Apply** button. The new group item appears under the **Groups** tree control.

[Contents](#)

[Groups](#)

[Group Item Properties](#)

Group Item Properties

The properties dialog for group items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Group Properties
- Grouped Tags

Group Item Properties

Group Properties

In the **Group Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the group.
- **Description:** Enter a description for the group (optional).
- **Data Type:** Each group must have a data type that will be used as a base data type for grouped data tags. All the data tags in the group are requested with this base data type, so the OPC server has to allow its conversions. When a data tag cannot be requested with a specified data type, then it will be ignored. An error then will be reported to the GenEvent Server. Select from the following data types: Native/Empty, Float, Double, Boolean, Byte, Word, DWord, Character, Short, Long, String.
- **Parameters:** Parameters are client-driven, and they do not change the number of requested data tags in runtime. Parameters can replace parts of data tag names by values passed in the group data tag name. Each parameter can be an integer or a string data type with optional formatting. Click the **Add** button to select add a parameter to the list. Once the parameter tag is added to the list, you can click the **Remove** button to delete the parameter from the list, or you can click the **Move Up** and **Move Down** buttons to change the order of the parameter in the list. For more information about parameters, please see the "Parameters" section below.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new group to be configured.

Group Properties

The screenshot shows the 'Group Properties' dialog box with the 'Grouped Tags' tab selected. The 'Name' field contains 'NewGroup'. The 'Description' field is empty. The 'Data Type' dropdown is set to 'FLOAT'. Below the 'Parameters' section, there is a table with columns: Name, Data Type, Places, Padding, and Alignment. To the right of the table are buttons: 'Add...', 'Remove', 'Move Up', and 'Move Down'. At the bottom of the dialog are buttons: 'Apply', 'Reset', and 'Add New'.

Parameters

Each data tag may support parameter(s) that could modify names of the data tags. Each parameter can be integer or string data type with optional formatting. The table below shows possible formatting for each supported data type.

Parameter data types and formatting for data tags.

Data Type	Formatting
Integer (number)	Minimum number of digits used for character representation of an integer number and padding character.
String	Minimum number of characters and padding character plus padding direction (add padding characters from left or right side).

The client application passes configured parameter values as a part of the full data tag name. Parameters are client driven, and they do not change the number of requested data tags in runtime. Parameters can be integer or string values. These values are then formatted using preconfigured format data, and then they replace specific parts of a data tag name by values passed in the data tag name. Parameters are delimited with specific characters (e.g. << and >>) and specified by their names (e.g.

ICONICS.Simulator.1\SimulatePLC\Ramp<<Parameter1>>) in the data tag name.

Grouped Tags

A **group data tag** can contain an unlimited number of data tags. Since each group is represented as a data tag, a group data tag may also be included in other groups. In the **Grouped Tags** tab, shown in the figure below, you can specify a list of tags that will be included in the group data tag.

Click the **Add** button to launch the **Unified Data Browser**, which enables you to

choose tags from connected OPC servers and databases. Once a tag is added to the list, you can click the **Remove** button to delete the tag from the list, or you can click the **Edit** button to change the selected tag.

Note. For more information about the Unified Data Browser, please refer to the Unified Data Browser help documentation.

Each data tag consists of the following attributes:

- Fully qualified data tag name (parameters or regular expressions can also be used) represented as a string
- Boolean flag that specifies whenever the tag is an array
- Array length – integer, valid when array flag is set to true
- Array lower bound - integer, valid when array flag is set to true

Grouped Tags

The screenshot shows a software window titled 'Grouped Tags'. It has two tabs at the top: 'Group Properties' and 'Grouped Tags'. The 'Grouped Tags' tab is selected. Inside the window, there is a section labeled 'Grouped Tags:' containing a table with four columns: 'Tag Name', 'Array', 'Lo Bound', and 'Length'. The table is currently empty. To the right of the table are three buttons: 'Add ...', 'Remove', and 'Edit ...'. At the bottom of the window, there are three buttons: 'Apply', 'Reset', and 'Add New'.

[Contents](#)

[Groups](#)

[Group Item Properties](#)

ValueSets

ValueSets

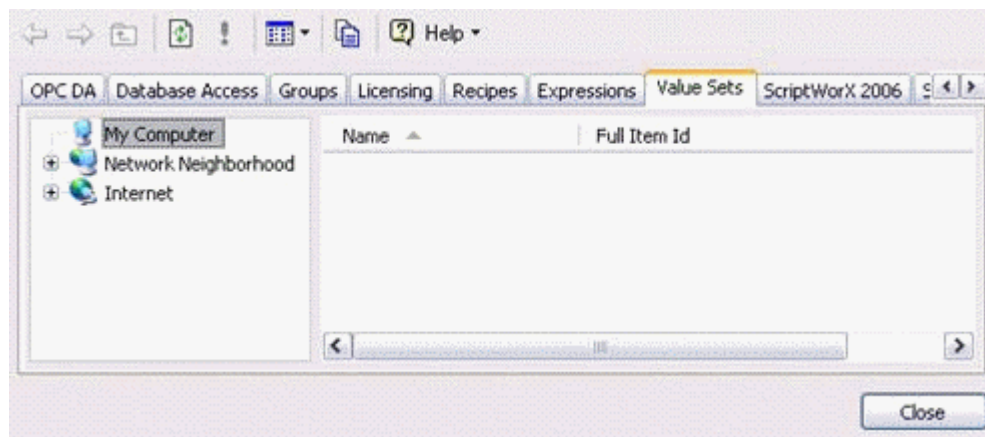
A ValueSet allows you to write preconfigured sets of values into a group of data tags. The ValueSets tree control in the Unified Data Manager enables you to configure sets of values for data tags. Features of ValueSets include:

- Create and edit ValueSets.
- Create folders for ValueSets.
- ValueSets are available as read/write data tags with string data type.
- Parameters are supported.
- Values are written synchronously to target OPC servers.
- Import/export ValueSet item configurations from/to XML files.

Each group of tags is represented by a ValueSet data tag. ValueSet data tags are organized in a tree structure of folders and ValueSet items. Any write to a ValueSet data tag will distribute written values to all data tags included in the ValueSet; all included data tags will have the same value as the ValueSet data tag. ValueSet data tags are organized in a tree structure of folders and ValueSet items.

Once you have configured ValueSets, they can be accessed from many applications via the appropriate tab in the Unified Data Browser, as shown in the figure below.

Selecting ValueSets from the Unified Data Browser

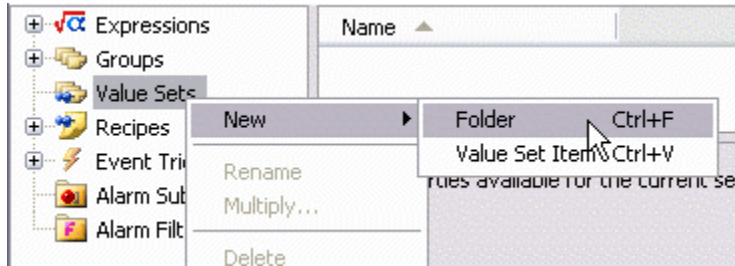


Creating a New ValueSet Folder

ValueSets are organized in a tree structure of folders and ValueSet tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new ValueSet folder:

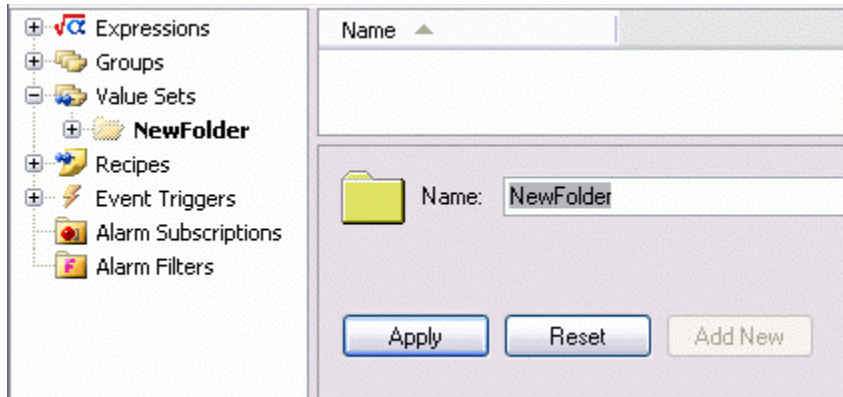
1. Right-click on the **ValueSets** tree control of the Configurator and select **New**, then click on the **Folder** command from the context menu, as shown in the figure below.

Creating a New ValueSet Folder



The properties dialog for the new ValueSet folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New ValueSet Folder



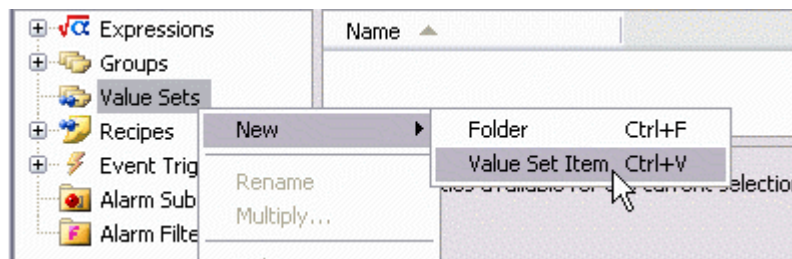
2. In the Name field, type a name for the new folder.
3. When you have finished configuring the folder properties, click the Apply button. The new folder appears under the ValueSets tree control.

Creating a New ValueSet Item

To create a new ValueSet item:

1. Right-click on the ValueSets tree control of the Configurator and select New, then select the ValueSet Item command from the context menu, as shown in the figure below.

Creating a New ValueSet Item



2. The properties dialog for the new ValueSet item appears in the right-hand pane of the Configurator, as shown in the figure below. Click on each tab and **fill in the required information**.

This dialog contains the following tabs, which are described in the sections that follow:

ValueSet Properties

ValueSet Tags

ValueSet Values

Import/Export

Setting the Properties for the New ValueSet Item

The screenshot shows the 'ValueSet Properties' dialog box. It has four tabs: 'ValueSet Properties' (active), 'ValueSet Tags', 'ValueSet Values', and 'Import/Export'. The 'Name' field is filled with 'NewValueSet'. The 'Description' field is empty. Below the description is a 'Parameters' section with a table that has headers: 'Name', 'Data Type', 'Places', 'Padding', and 'Alignment'. To the right of the table are buttons: 'Add ...', 'Remove', 'Move Up', and 'Move Down'. At the bottom of the dialog are three buttons: 'Apply', 'Reset', and 'Add New'.

3. In the **Name** field of the **ValueSet Properties** tab, type a name for the new ValueSet.
4. In the **Description** field of the **ValueSet Properties** tab, you can type an optional description for the new ValueSet.
5. When you have finished configuring ValueSet properties, click the **Apply** button. The new ValueSet item appears under the **ValueSets** tree control.

[Contents](#)

[ValueSets](#)

[ValueSet Item Properties](#)

ValueSet Item Properties

The properties dialog for ValueSet items, shown in the figure below, contains the following tabs, which are described in the sections below:

- ValueSet Properties
- Value et Tags
- ValueSet Values
- Import/Export

ValueSet Item Properties

ValueSet Properties

In the **ValueSet Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the ValueSet.
- **Description:** Enter a description for the ValueSet (optional).
- **Data Type:** Each ValueSet must have a data type that will be used a base data type for ValueSet data tags. All the data tags in the ValueSet are requested with this base data type, so the OPC server has to allow its conversions. When a data tag cannot be requested with a specified data type, then it will be ignored. An error then will be reported to the GenEvent Server. Select from the following data types: Native/Empty, Float, Double, Boolean, Byte, Word, DWord, Character, Short, Long, String.
- **Parameters:** Parameters are client-driven, and they do not change the number of requested data tags in runtime. Parameters can replace parts of data tag names by values passed in the ValueSet data tag name. Each parameter can be an integer or a string data type with optional formatting. Click the **Add** button to select add a parameter to the list. Once the parameter tag is added to the list, you can click the **Remove** button to delete the parameter from the list, or you can click the **Move Up** and **Move Down** buttons to change the order of the parameter in the list. For more information about parameters, please see the "Parameters" section below.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new group to be configured.

ValueSet Properties

ValueSet Properties ValueSet Tags ValueSet Values Import/Export

Name: NewValueSet

Description:

Parameters:

Name	Data Type	Places	Padding	Alignment

Add ...

Remove

Move Up

Move Down

Apply Reset Add New

Parameters

Each data tag may support parameter(s) that could modify names of the data tags. Each parameter can be integer or string data type with optional formatting. The table below shows possible formatting for each supported data type.

Data Type and formatting for parameters for parameters.

Data Type	Formatting
Integer (number)	Minimum number of digits used for character representation of an integer number and padding character.
String	Minimum number of characters and padding character plus padding direction (add padding characters from left or right side).

The client application passes configured parameter values as a part of the full data tag name. Parameters are client driven, and they do not change the number of requested data tags in runtime. Parameters can be integer or string values. These values are then formatted using preconfigured format data, and then they replace specific parts of a data tag name by values passed in the data tag name.

Parameters are delimited with specific characters (e.g. << and >>) and specified by their names (e.g.

ICONICS.Simulator.1\SimulatePLC\Ramp<<Parameter1>>) in the data tag name.

ValueSet Tags

A **ValueSet data tag** can contain an unlimited number of data tags. In the **ValueSet Tags** tab, shown in the figure below, you can specify a list of tags that will be included in the ValueSet data tag.

Click the **Add** button to launch the **Unified Data Browser**, which enables you to choose tags from connected OPC servers and databases. Once a tag is added to the list, you can click the **Remove** button to delete the tag from the list, or you can

click the **Edit** button to change the selected tag.

Note: For more information about the Unified Data Browser, please refer to the Unified Data Browser help documentation.

Each data tag consists of the following attributes:

- Fully qualified data tag name (parameters or regular expressions can also be used) represented as a string
- Boolean flag that specifies whenever the tag is an array
- Array length – integer, valid when array flag is set to true
- Array lower bound - integer, valid when array flag is set to true

ValueSet Tags

ValueSet Tags:

Tag Name	Array	Lo Bound	Length
----------	-------	----------	--------

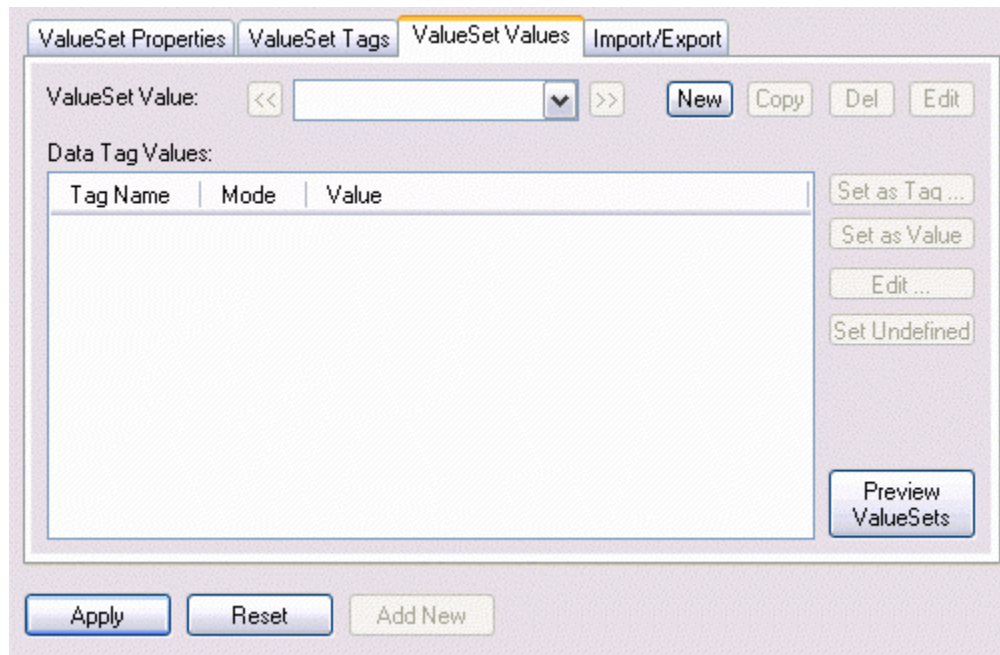
Add ...
Remove
Edit ...

Apply Reset Add New

ValueSet Values

In the **ValueSet Values** tab, shown in the figure below, configure the following settings:

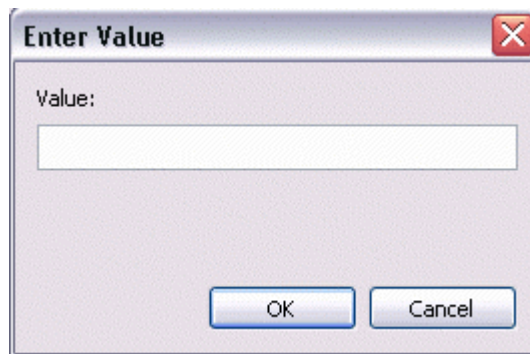
ValueSet Values



ValueSet Value

To specify a value for the ValueSet, click the **New** button. This opens the **Enter Value** dialog box, as shown in the figure below. Enter a value in to the **Value** field, and then click **OK**. Each value you add appears in the **ValueSet Value** drop-down list. You can also copy, edit, and delete values in the drop-down list.

Data Tag Value



Data Tag Values

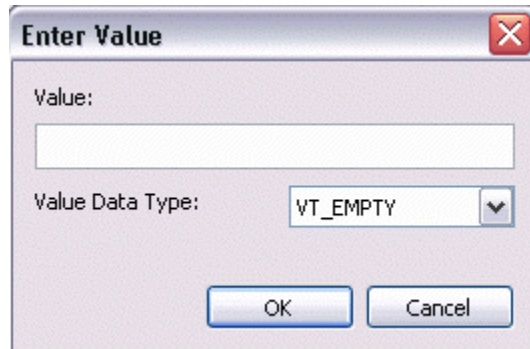
In the **Data Tag Values** section, you can associate a data tag with each ValueSet value. Click the **Set as Tag** button to launch the **Unified Data Browser**, which enables you to choose tags from connected OPC servers and databases. Once a tag is added to the list, you can click the **Edit** button to change the selected tag. You can also click the **Set Undefined** button to dissociate the selected tag from a value.

To assign the tag to a value, click the **Set as Value** button. This opens the **Enter Value** dialog box, as shown in the figure below. Enter a **Value** and choose one of the following **Value Data Types** from the drop-down list.

- **VT_I4**: 4-byte integer
- **VT_R8**: 8-byte floating-point number (double)

- **VT_DATE:** Date in OleDateTime format; the DATE type is implemented using an 8-byte floating-point number. Days are represented by whole number increments starting with 30 December 1899, midnight as time zero. Hour values are expressed as the absolute value of the fractional part of the number.
- **VT_BSTR:** String
- **VT_BOOL:** Boolean

Data Tag Value

A dialog box titled "Enter Value" with a red close button in the top right corner. It contains a text input field labeled "Value:" and a dropdown menu labeled "Value Data Type:" with "VT_EMPTY" selected. At the bottom are "OK" and "Cancel" buttons.

Click the **Preview ValueSets** button to see a table listing the sets of associated tags and values.

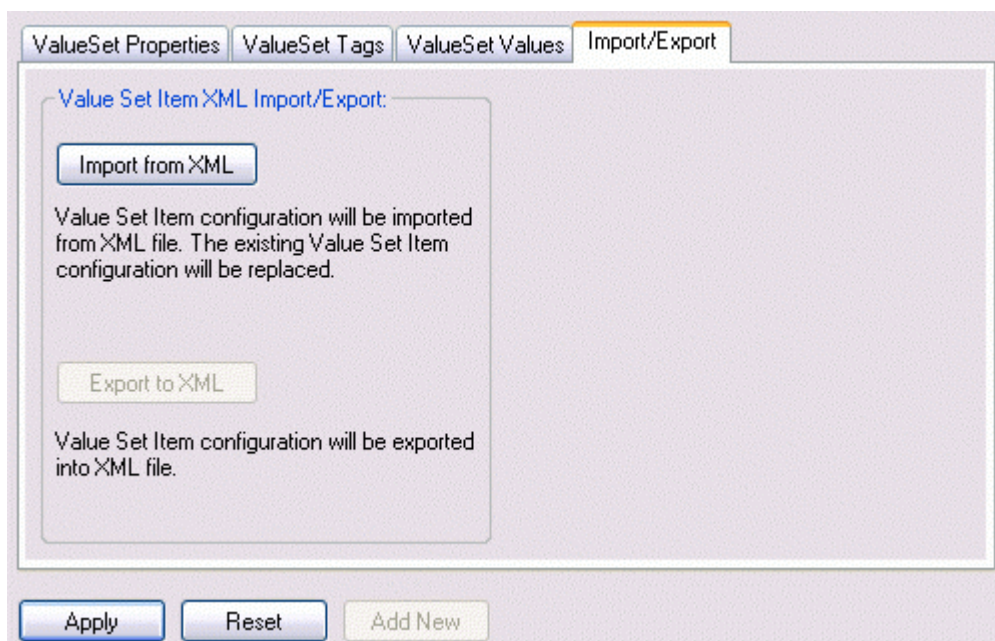
ValueSet Import/Export

In the **ValueSet Import/Export** tab, shown in the figure below, you can import or export ValueSet item configurations to or from XML files.

When you click the **Import From XML** button, the ValueSet item configuration will be imported from the selected XML file. The existing ValueSet item configuration will be replaced by the imported configuration.

When you click the **Export to XML** button, the ValueSet item configuration will be exported to a specified XML file.

ValueSet Import/Export



[Contents](#)

[ValueSets](#)

[ValueSet Item Properties](#)

Recipes

Recipes

A **recipe** is a list of ingredients that are used to create a product. A recipe specifies the amount of each ingredient and is categorized by product variation. In the Unified Data Manager, recipes simplify work with a large set of data tags (recipe items). Each recipe consists of any number of recipe items.

The **Recipes** tree control in the Unified Data Manager enables you to specify a list of ingredients that are used to create a product, such as cookies. Features of recipes include:

- Create and edit recipes (products).
- Create folders for recipes.
- Create and edit recipe items (product variations).
- List types of ingredients (e.g. flour, sugar, oil) used to create a product (e.g. cookies).
- Specify the amount of each ingredient needed.
- Categorize recipes (e.g. version, flavor, or color) by product variation (e.g. chocolate chip, oatmeal, or peanut butter).
- Easy runtime integration using the Tree Explorer ActiveX to select recipes within applications.
- Recipe ActiveX allows you to display and edit recipe data within applications.
- Import/export recipe configurations from/to XML and CSV files.

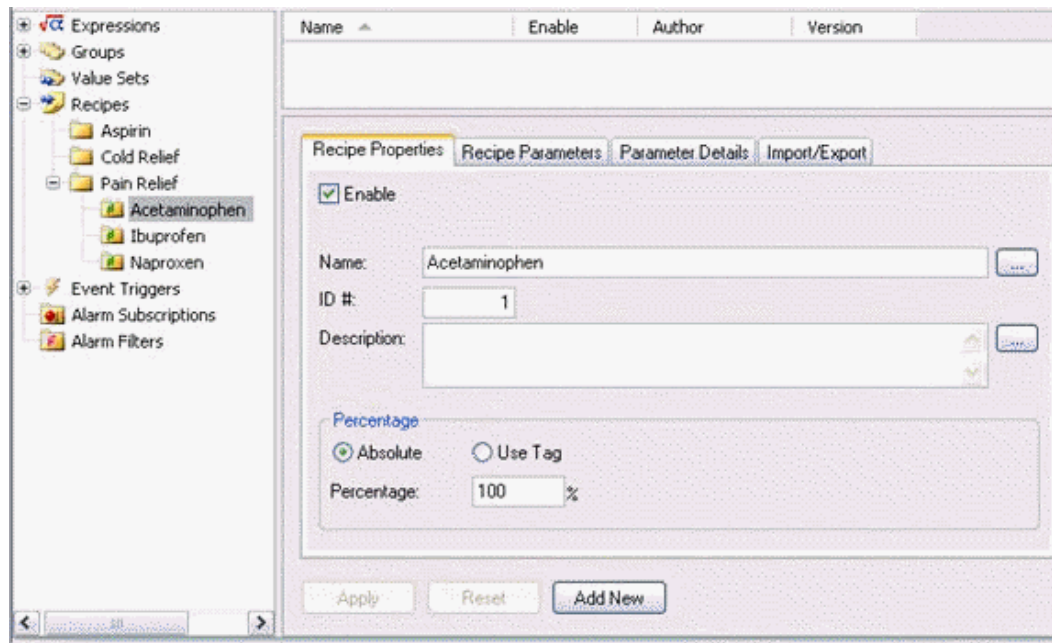
Overview of Recipe Configuration

The figure below shows an overview of how recipes are configured in the Unified Data Manager. Recipes are organized in a tree structure of folders, subfolders, recipes, and recipe tags (items).

- **Folders (product category):** Folders allow organization of recipes into a hierarchical tree structure of different recipe categories. In the example configuration shown in the figure below, recipes are contained in a folder named **Pills**.
- **Subfolder (product type):** Subfolders enable you to further categorize recipes by product type. In the example configuration shown in the figure below, the **Pills** folder contains subfolders called **Aspirin**, **Cold Relief**, and **Pain Relief**, which contain different product recipes for pills.
- **Recipe (product variations):** A recipe represents a variation of a specific product type. For each product type, you can have multiple recipes. In the example configuration shown in the figure below, the **Pain Relief** folder contains recipes for **Acetaminophen**, **Ibuprofen**, and **Naproxen**.
- **Recipe items (recipe variations):** Each recipe consists of any number of recipe items. In the example configuration shown in the figure below, the **Acetaminophen** recipe contains recipe items for

both **Extra Strength** and **Regular** varieties.

Overview of Recipe Configuration



Using Recipes in Applications

The recipes and recipe items that you configure in the Unified Data Manager are available as data tags that can be used in several different GENESIS32 client applications. There are two ActiveX controls in GENESIS32 that enable you to use recipes:

- **Tree Explorer ActiveX:** Enables you to browse directories and folders for files or recipes. For more information, please see the Tree Explorer ActiveX help documentation.
- **Recipe ActiveX:** Displays recipe data from the subscribed Recipe Server requested by the Tree Explorer ActiveX. For more information, please see the Recipe ActiveX help documentation.

These ActiveX controls can be inserted into a GraphWorX32 display, for example, so that recipe data can be viewed directly from the display. In addition, GraphWorX32 contains a recipe pick action that allows you to save new values to the recipe server configuration or download recipe values to a PLC device.

[Contents](#)

[Recipes](#)

[Creating a New Recipe](#)

[Recipe Settings](#)

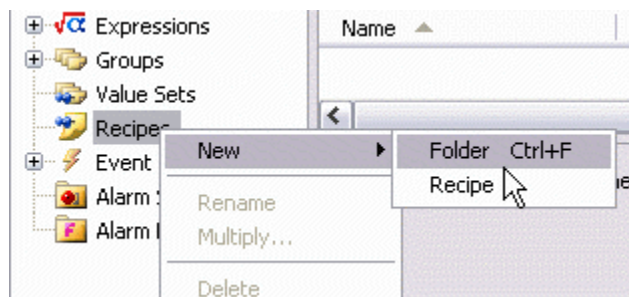
[Recipe Item Settings](#)

Creating a New Recipe

To create a new recipe:

1. Right-click on the **Recipes** tree control of the Configurator and select the **New** command in the **Recipe folder** of the context menu, as shown in the figure below.

Creating a New Recipe



2. The properties dialog for the new recipe appears in the right-hand pane of the Configurator, as shown in the figure below. This dialog contains the following tabs, which are described in the sections below:

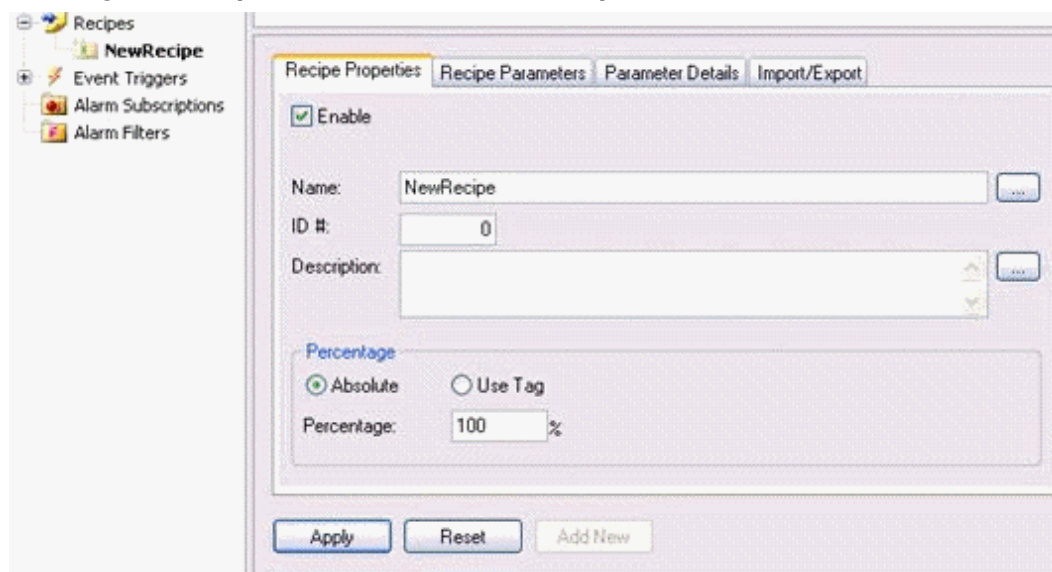
Recipe Properties

Recipe Parameters

Parameter Details

Import/Export

Setting the Properties for the New Recipe



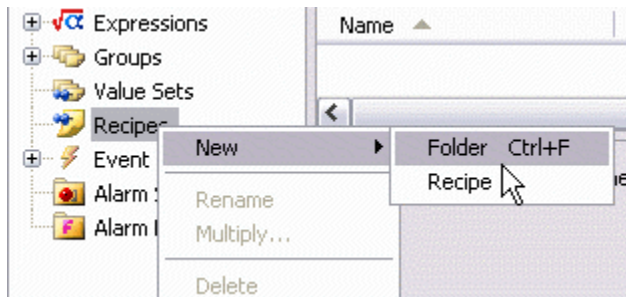
3. In the **Name** field of the **Recipe Properties** tab, type a name for the new recipe.
4. In the Description field of the **Recipe Properties** tab, you can type an optional description for the new recipe.
5. When you have finished configuring recipe properties, click the **Apply** button. The new recipe appears under the **Recipes** tree control.

Creating a New Recipe Folder

Recipes can be organized in a tree structure of folders and subfolders. Folders allow organization of recipes into different recipe categories. Subfolders enable you to further categorize recipes by product type. To create a new recipe folder:

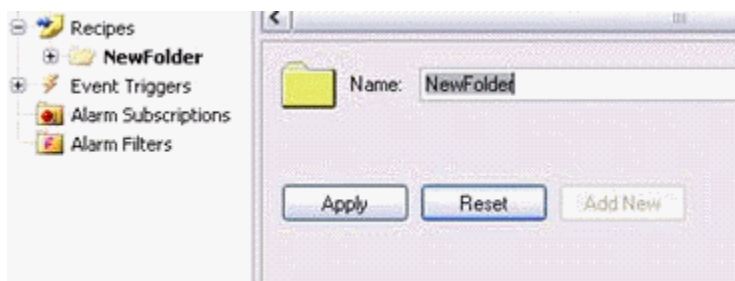
1. Right-click on the **Recipes** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New Recipe Folder



2. The properties dialog for the new recipe folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Recipe Folder



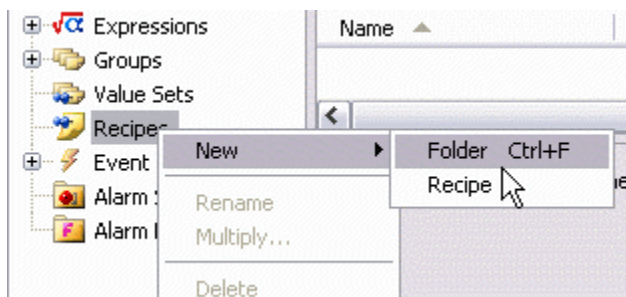
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Recipes** tree control.

Creating a New Recipe Item

To create a new recipe item:

1. Right-click on a **Recipe** in the **Recipes** tree control of the Configurator and select **New > Recipe Item** from the pop-up menu, as shown in the figure below.

Creating a New Recipe Item

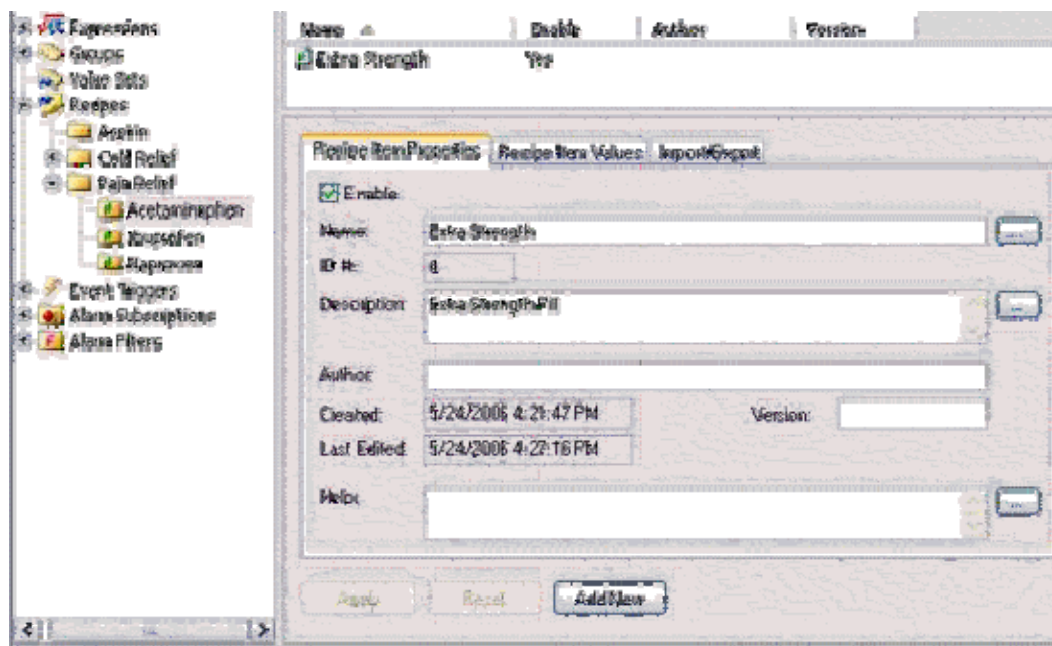


The properties dialog for the new recipe item appears in the right-hand

pane of the Configurator, as shown in the figure below. This dialog contains the following tabs, which are described in the sections below:

- Recipe Item Properties
- Recipe Item Values
- Recipe Item Import/Export

Setting the Properties for the New Recipe Item



2. In the **Name** field of the **Recipe Item Properties** tab, type a name for the new recipe item.
3. In the **Description** field of the **Recipe Item Properties** tab, you can type an optional description for the new recipe item.
4. When you have finished configuring recipe item properties, click the **Apply** button. The new recipe item appears under the selected recipe in the **Recipes** tree control.

[Contents](#)

[Recipes](#)

[Creating a New Recipe](#)

[Recipe Settings](#)

[Recipe Item Settings](#)

Recipe Settings

The properties dialog for recipes, shown in the figure below, contains the following tabs, which are described in the sections below:

- Recipe Properties

- Recipe Parameters
- Parameter Details
- Import/Export

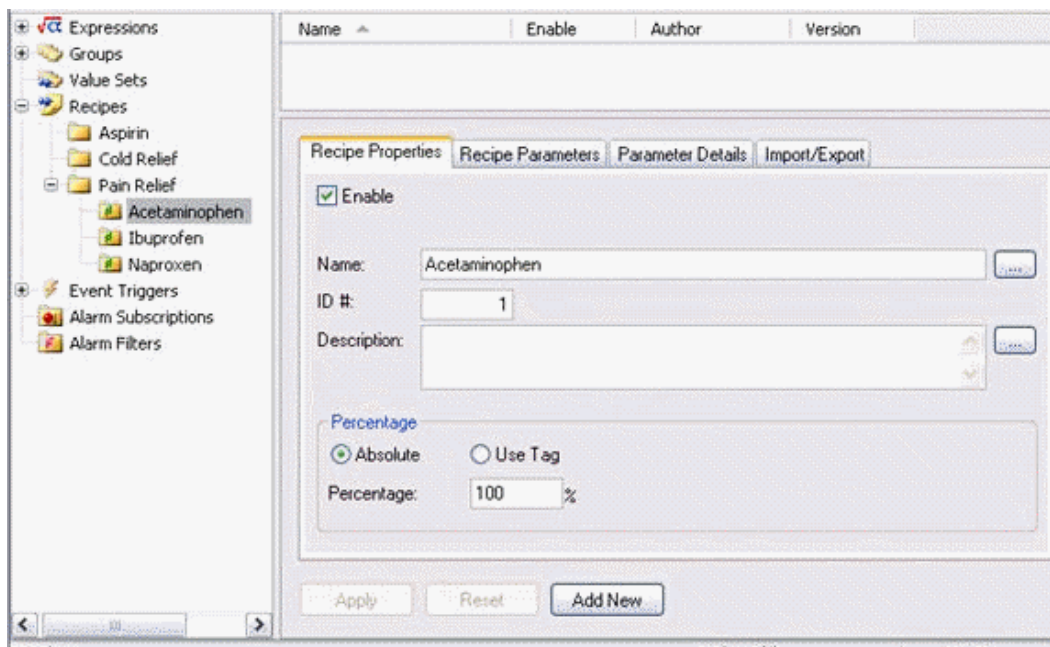
Recipe Properties

Recipe Properties

A **recipe** represents a variation of a specific product type. For each product type, you can have multiple recipes. In the example configuration shown in the figure below, the **Pain Relief** folder contains recipes for **Acetaminophen**, **Ibuprofen**, and **Naproxen**. In the **Recipe Properties** tab, configure the following settings:

- **Enable:** Activates the recipe in the recipe server configuration. Enabled recipes are available to client applications via the Tree Explorer ActiveX and the Recipe ActiveX. For more information, please see the Tree Explorer and Recipe ActiveX help documentation.
- **Name:** Enter a name for the recipe. Clicking the ... button allows you to browse for global aliases and language aliases.
- **ID #:** Assign the recipe a unique identification number.
- **Description:** Enter a description for the recipe (optional). Clicking the ... button allows you to browse for global aliases and language aliases.
- **Percentage:** To specify an absolute percentage value, select the **Absolute** radio button and enter the percentage value in the edit box. You can also select the **Use Tag** radio button, and then browse for a **Percentage Tag** using the Unified Data Browser.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new recipe to be configured.

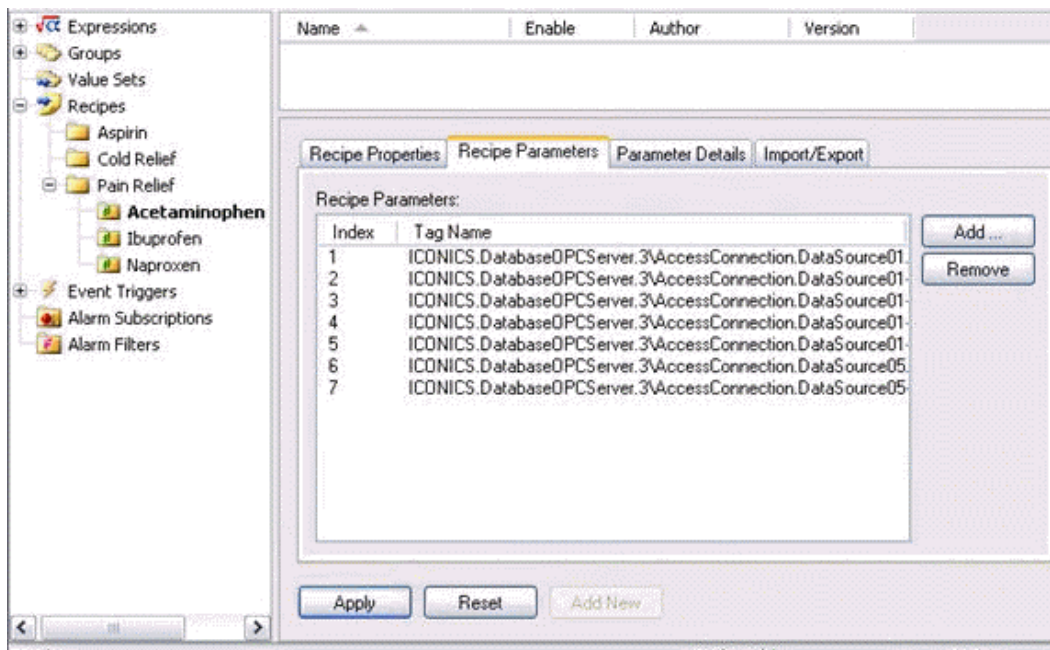
Recipe Properties



Recipe Parameters

The **Recipe Parameters** tab, shown in the figure below, defines a set of ingredients (parameters) for the recipe. Each ingredient (parameter) corresponds to a data tag. Click the **Add** button to select a data tag from the Unified Data Browser. Each tag name is assigned to an **Index** number, as shown in the figure below. Once a data tag is added to the list, you can click the **Remove** button to delete the tag from the list.

Recipe Parameters



Parameter Details

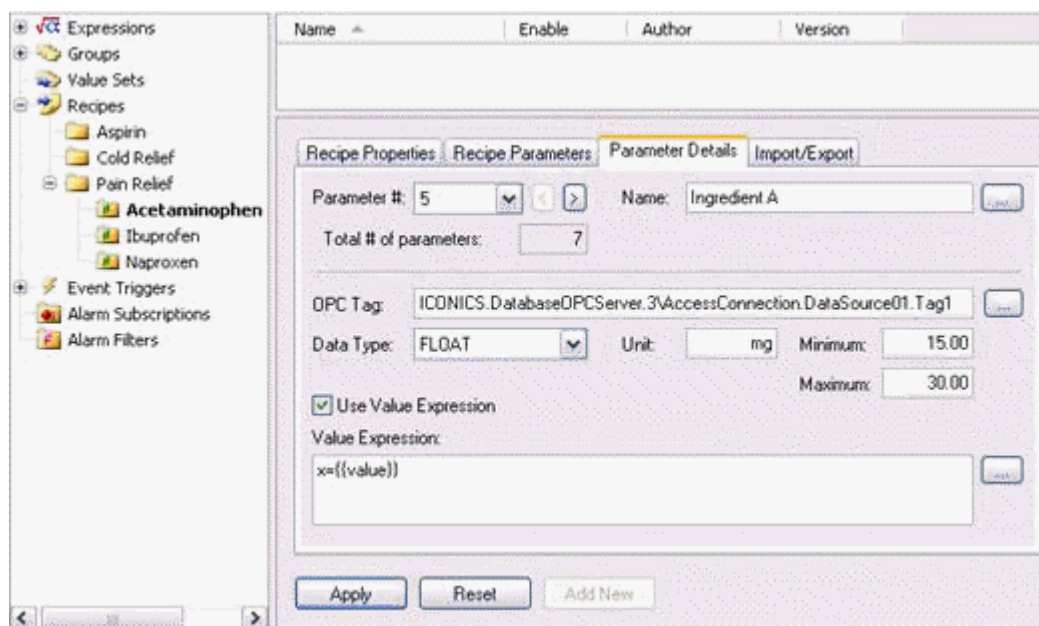
In the **Parameter Details** tab, shown in the figure below, you can assign a human

readable name to each ingredient index (parameter) number that you specified in the **Recipe Parameters** tab.

- **Parameter #:** Select an ingredient's index number from the drop-down list. You can also click the right and left arrow buttons to scroll through the available parameters.
- **Name:** Enter a human readable name for the selected parameter number. In the example shown in the figure below, the name **Ingredient A** is assigned to parameter 1. Clicking the ... button allows you to browse for global aliases and language aliases.
- **Total # of Parameters:** This box displays the total number of parameters, which should match the total number of ingredient index (parameter) items that you specified in the **Recipe Parameters** tab.
- **OPC Tag:** Displays the data tag name that corresponds to the currently selected parameter.
- **Data Type:** Select from the following data types: Native/Empty, Float, Double, Boolean, Byte, Word, DWord, Character, Short, Long, String.
- **Unit:** Specify a unit of measurement (e.g. liter, gram, gallon, pound, etc.) for the selected parameter (ingredient).
- **Minimum:** Specify a minimum value (e.g. 15 milligrams) for the selected parameter.
- **Maximum:** Specify a maximum value (e.g. 30 milligrams) for the selected parameter.
- **Use Value Expression:** Enables the Value Expression field.
- **Value Expression:** The value expression is used to recalculate the original value of a single ingredient in the recipe. You must use the **x={ {value} }** syntax to indicate that you want to recalculate the original values specified in the recipe. Click the ... button to launch the **Expression Editor**, which is available to assist you in creating your value expression.

Note. For more information about the Expression Editor, please refer to the Expression Editor help documentation.

Parameter Details

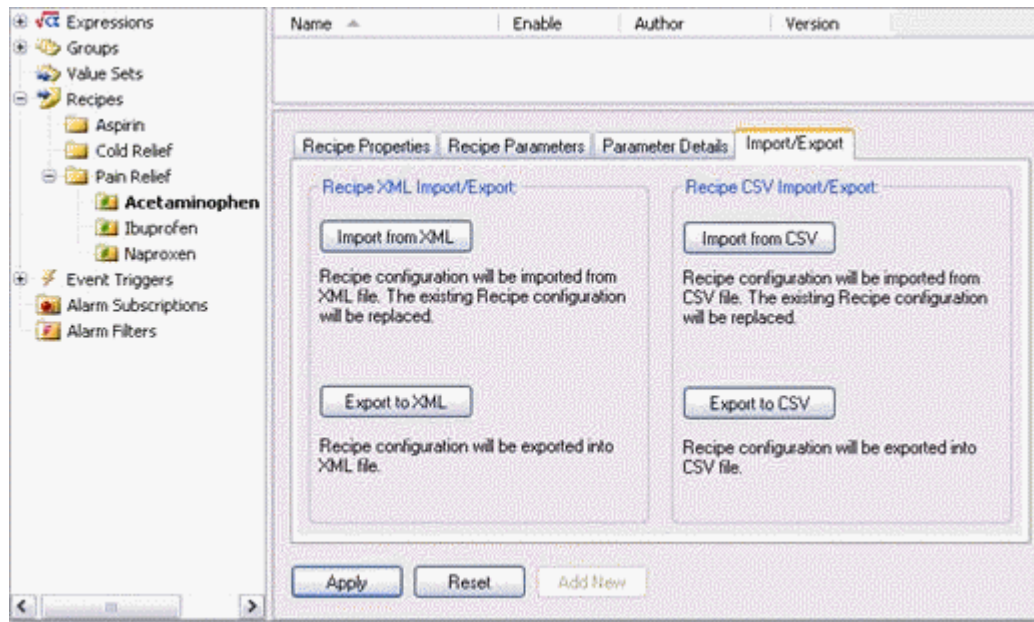


Recipe Import/Export

In the **Recipe Import/Export** tab, shown in the figure below, you can import or export recipe configurations to or from XML or CSV files. You can perform the following operations:

- Click the **Import From XML** button, to import the recipe configuration from the selected XML file. The existing recipe configuration will be replaced by the imported configuration.
- Click the **Export to XML** button, the recipe configuration will be exported to a specified XML file.
- Click the **Import From CSV** button, the recipe configuration will be imported from the selected CSV file. The existing recipe configuration will be replaced by the imported configuration.
- Click the **Export to CSV** button, the recipe configuration will be exported to a specified CSV file.

Recipe Import/Export



[Contents](#)

[Recipes](#)

[Creating a New Recipe](#)

[Recipe Settings](#)

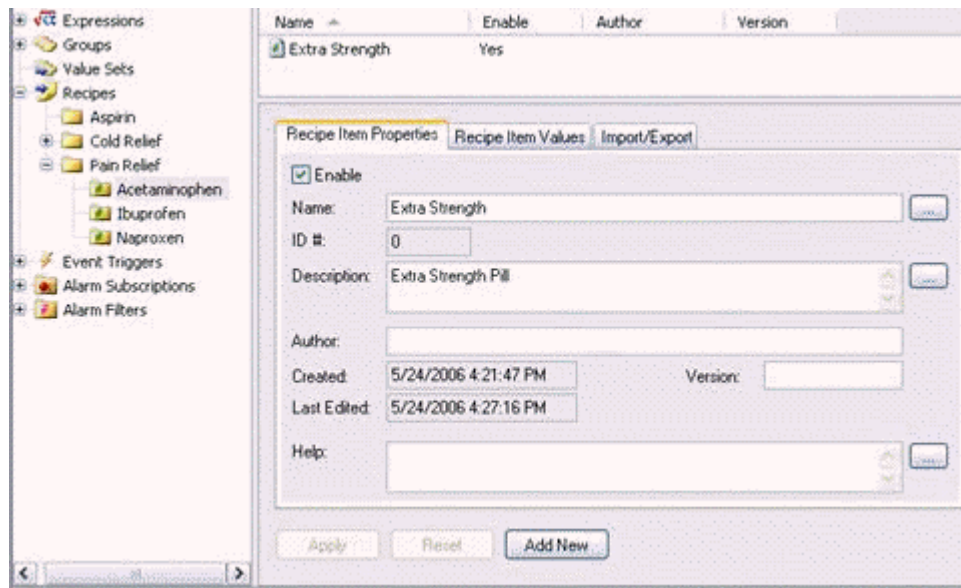
[Recipe Item Settings](#)

Recipe Item Settings

Recipe items define variations within a particular recipe. The properties dialog for recipe items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Recipe Item Properties
- Recipe Item Values
- Recipe Item Import/Export

Setting the Properties for the New Recipe Item



Recipe Item Properties

Each recipe consists of any number of recipe items. In the example configuration shown in the figure below, the **Acetaminophen** recipe contains recipe items for both **Extra Strength** and **Regular** varieties. In the **Recipe Item Properties** tab, shown in the figure below, configure the following settings:

- **Enable:** Activates the recipe item in the recipe.
- **Name:** Enter a name for the recipe item. Clicking the ... button allows you to browse for global aliases and language aliases.
- **ID #:** Assign the recipe item a unique identification number.
- **Description:** Enter a description for the recipe item (optional). Clicking the ... button allows you to browse for global aliases and language aliases.
- **Author:** Specify the name of the recipe author (optional).
- **Created:** Displays the date and time when the recipe item was created.
- **Version:** Specify a version number for the recipe item (optional).
- **Last Edited:** Displays the most recent date and time when the recipe item was modified.
- **Help:** Enter help instructions for the recipe item (optional). Clicking the ... button allows you to browse for global aliases and language aliases.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new recipe item to be configured.

Recipe Item Properties

The screenshot shows the 'GENESIS32 Unified Data Manager' interface. On the left is a tree view with categories: Expressions, Groups, Value Sets, Recipes, Event Triggers, Alarm Subscriptions, and Alarm Filters. Under 'Recipes', there are sub-items: Aspirin, Cold Relief, Pain Relief, Acetaminophen, Ibuprofen, and Naproxen. The main window displays a table with columns: Name, Enable, Author, and Version. The 'Extra Strength' item is selected, and its 'Enable' status is 'Yes'. Below the table, the 'Recipe Item Properties' tab is active, showing fields for Name (Extra Strength), ID # (0), Description (Extra Strength Pill), Author, Created (5/24/2006 4:21:47 PM), Version, Last Edited (5/24/2006 4:27:16 PM), and Help. At the bottom are buttons for Apply, Reset, and Add New.

Recipe Item Values

The **Recipe Item Values** tab, shown in the figure below, lists the human-readable names for each of the ingredient index (parameter) numbers that are defined for the recipe ingredients, including the data type, unit of measurement (e.g. milligrams), and the range of minimum and maximum values. In the **Value** column, you must manually type in a value (quantity) for each recipe ingredient listed within the specified range of minimum and maximum values.

Recipe Item Values

The screenshot shows the 'GENESIS32 Unified Data Manager' interface. On the left is a tree view with categories: Expressions, Groups, Value Sets, Recipes, Event Triggers, Alarm Subscriptions, and Alarm Filters. Under 'Recipes', there are sub-items: Aspirin, Cold Relief, Pain Relief, Acetaminophen, Ibuprofen, and Naproxen. The main window displays a table with columns: Name, Enable, Author, and Version. The 'Extra Strength' item is selected, and its 'Enable' status is 'Yes'. Below the table, the 'Recipe Item Values' tab is active, showing a table with columns: Name, Type, Unit, Ranges, Mode, and Value. The table lists ingredients and their values. At the bottom are buttons for Apply, Reset, and Add New.

Name	Type	Unit	Ranges	Mode	Value
Ingredient A	FLOAT	mg	0.1076756480	Value	22.43
Ingredient B	FLOAT	mg	0.1076756480	Value	28.43
Ingredient C	FLOAT	mg	0.1076756480	Value	17.41
Limit	FLOAT	mg	0.1072693248	Value	1.69
Tank D	FLOAT	cc	0.0	Value	15.45
Temperature	FLOAT	F	0.1080377344	Value	326
Valve Pos.	BOOL		0.0	Value	-1

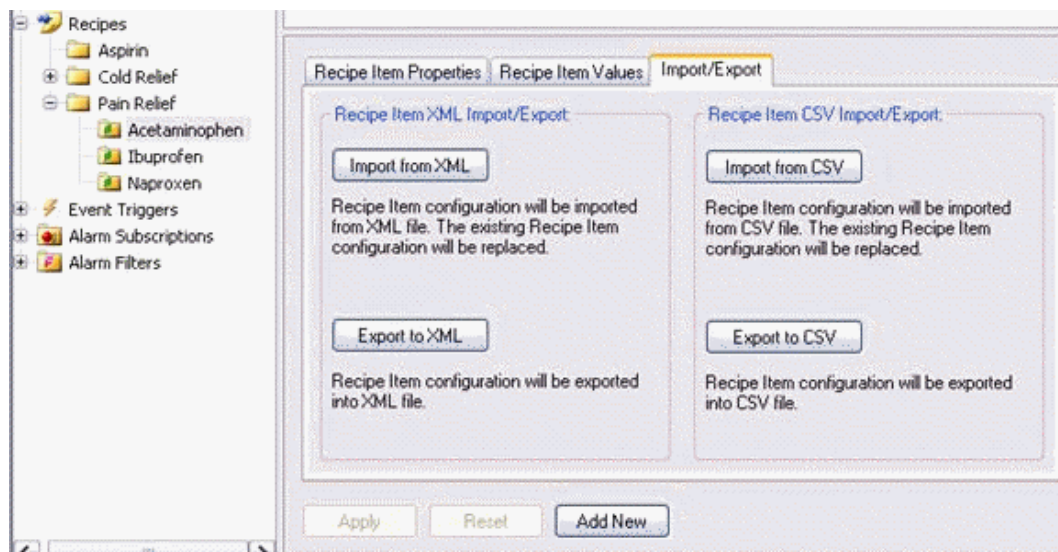
Recipe Item Import/Export

In the **Recipe Item Import/Export** tab, shown in the figure below, you can import or export recipe items to or from XML or CSV files. You can perform the

following operations:

- Click the **Import From XML** button, the recipe item configuration will be imported from the selected XML file. The existing recipe item configuration will be replaced by the imported configuration.
- Click the **Export to XML** button, the recipe item configuration will be exported to a specified XML file.
- Click the **Import From CSV** button, the recipe item configuration will be imported from the selected CSV file. The existing recipe item configuration will be replaced by the imported configuration.
- Click the **Export to CSV** button, the recipe item configuration will be exported to a specified CSV file.

Recipe Item Import/Export



[Contents](#)

[Recipes](#)

[Creating a New Recipe](#)

[Recipe Settings](#)

[Recipe Item Settings](#)

Registers

Registers

Registers are named variables that all GENESIS32 clients and OPC clients can use. The UDM uses registers that can serve as global variables. In the various client applications, you can configure global variables for use within that particular application, or scope that register to apply to a particular document for that application.

If you have used registers inside DataWorX32, then the features of UDM registers are a subset of the features available for registers in DataWorX32. UDM 9.10 doesn't support the use of UDM registers through OPC, as an alias or redundancy register, or allow automation through Visual Basis. The most significant difference between UDM and DWX registers is that UDM registers are not real OPC tags, and UDM registers cannot be accessed with GenClient and the appropriate plug-in. The UDM is also missing special registers for data aliasing, switching and redundancy as noted in the table below.

The table below shows a comparison of UDM vs. DataWorX (DWX) registers.

Limitation of UDM vs. DataWorX Registers

	UDM Registers	DataWorX Registers
Available through OPC	No	Yes
Switch Register, Alias Register, Redundancy Register	No	Yes
Available through Automation (VB)	No	Yes
Online changes	Automatic	Manual
Data Propagation	Limited, can be based on tag	Limited, can be delayed
Ranges	No	Yes

A register consists of three separate definitions:

- An **input data tag** and data type, which can be an OPC Data point or a value
- A **register value**, which is the format that the data is stored in the register in
- An **output tag**, which may or may not be activated.

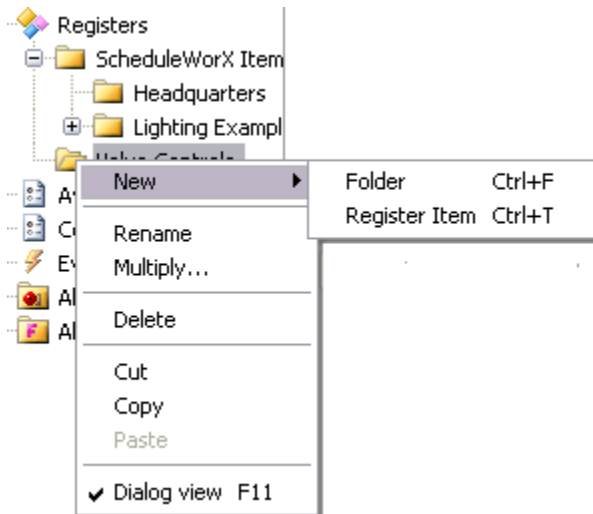
These three components are described in the topic [Register Properties](#).

Creating a Register Folder

To create a register folder:

1. Right click on the Registers entry, click **New** and select the **New Folder** command from the context menu, as shown below, or press the Ctrl+F keystroke.

Creating a Register folder

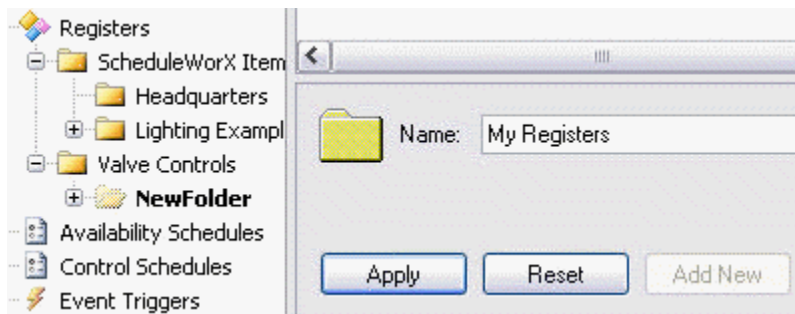


If you right click on the word "Registers" then you create a top level folder in the Registers tree control.

If you right click on a specific folder in the Registers tree then you create a subfolder below the folder you right clicked on.

2. Enter the name of your new Register folder into the **Name** text box, then click the **Apply** button as shown below.

Naming a register folder.



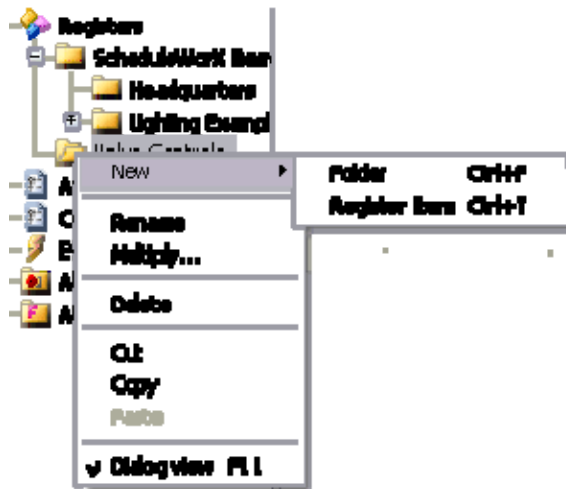
Your name replaces the "NewFolder" entry in the tree, as shown above.

Creating a Register Item

To create a register item:

1. Right click on a Registers folder, click **New** and select the **Register Item** command from the context menu, as shown below, or press the Ctrl+T keystroke.

Creating a Register folder

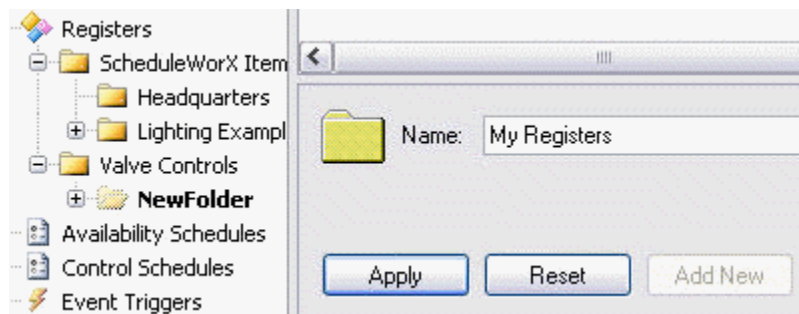


2. Enter the **name** of your new Register into the Name text box, as shown below.

Each register must have a unique name composed of only numbers, letters, and the underscore "_" character. UDM verifies the names are unique, prompting you to change the name this is not the case. The Register name field does not accept spaces. Spaces are disabled intentionally because the register names used by OPC clients as tag names do not accept spaces.

3. Enter the **Description** (optional), select the **Data Type**, enable or disable the **Writable** (READ/WRITE) check box, as well as the **Input Update Propagation** properties, as desired.
4. Click the **Apply** button

Naming a register item.



Your register appears in the tree control under the folder that you clicked on.

You can view UDM registers in the the OPC Universal Tag Browser; as you can DataWorX32 registers. The number of registers you can define is limited by system resources alone.

[Contents](#)

[Registers](#)

[Register Properties](#)

Register Properties

A register has three separate sets of properties that you can specify:

- An **input data tag** and data type, which can be an OPC Data point or a value
- A **register value**, which is the format that the data is stored in the register in
- An **output tag**, which may or may not be activated.

This page describes the different properties that you can set for each of these different sets.

Register Properties Tab

The Register properties section for a register (shown below) define how the data from the input source is stored in the register for later use. You can define the data type for the data, in one of the following datatypes: Native, Float, Double, Bool (Boolean), Word, DWord, Char (Character), Long, Short, and String. For example, if the data source is a Boolean and you store it in a data type such as Float, then the data is converted from a logical 1 or 0 into a decimal representation such as 1.00... and 0.00...

Enabling the Writable check box allows the register's contents to be edited. When disabled the register is in a read-only form.

The Register Properties section for a register.

The screenshot shows the 'Register Properties' dialog box with the following details:

- Tab:** Register Properties
- Name:** MyRegister
- Description:** (Empty text box)
- Data Type:** NATIVE (Dropdown menu)
- Writable:** ☐ (Unchecked)
- Input updates propagation:**
 - ☐ Enabled
 - ☐ Disabled
 - ☒ Enabled on Tag
 - ☐ Disabled on Tag
- Tag:** (Empty text box)
- Note:** Register will NOT propagate if the Tag has a value 0, FALSE or BadQuality
- Buttons:** Apply, Reset, Add New

The **Input update propagation** section determines when the register value can be altered *by the data source*. The update is from the data source and is independent of the Writable setting. You can enable or disable updates, or allow updates based on the value in a particular tag using the Enabled on Tag setting (as shown above). Disabled on Tag changes the condition to "Register WILL propagate if the Tag has a value of 0, FALSE, or BadQuality."

Inputs Properties

A register has one input (or source) to define its content. For the UDM the most

widely used source is an OPC tag. An input may be assigned to None to create a global variable. The initial value is selectable.

To view the Input Properties of a Register:

1. Click on the Register Input/Output tab, as shown below.
2. Set the input tag to OPC Data Point, or to None which is the definition of a global variable.
3. Define the Requested Data Type for the data, in one of the following datatypes: Native, Float, Double, Bool (Boolean), Word, DWord, Char (Character), Long, Short, and String.
4. Set the Scan Rate (50 ms is the default) for polling the OPC data source for changes.
5. Click the **Apply** button to enforce your changes.

When the value of a register's input changes, it is written to an output assigned to that register (if any).

The Register Input/Output tab.

Comparison of Register inputs for UDM vs. DWX

Input	UDM	DWX
OPC	Yes	Yes
None	Yes, for the initial value	Yes, Initial value
Register	No (or counted UDM Register)	Yes
Expression	No (or counted UDM expression)	Yes
Condition	No	Yes

Register Outputs

One of the key functions of registers in the UDM is to provide a mechanism for

defining variables and making them available to all GENESIS32 clients and OPC clients. The "Global Variable" name is simply the register's name. It can be given values through OPC tags, constants, or even VBA. OPC server data-bridging is accomplished by assigning the input of a register to one OPC data point, and assigning the output to different OPC data points.

An output may be assigned to an item of an OPC server, and the register writes values to the server.

A register may be designated as "Read-Only." The register will still write to its outputs, but the value can only come from an input, such as another OPC server or an expression, not from an OPC client. If this is the case, clients may only view its contents.

To view the Input Properties of a Register:

1. Click on the **Register Input/Output** tab, as shown below.
Set the **output tag** if desired.
2. An output tag is optional and doesn't have to be set.
3. Click the **Apply** button to enforce your changes.

The table below shows a comparison with UDM vs. DWX register output.

Comparison of Register output for UDM vs. DWX

Output	UDM	DWX
None	Yes	Yes
Single	Yes	Yes
Multi	No (or counted UDM group)	Yes

[Contents](#)

[Registers](#)

[Register Properties](#)

Events

Events Triggers

The **Event Triggers** tree control in the Unified Data Manager enables you to set up several different types of triggers, which determine when (or on what condition) events will be executed. Features of event triggers include:

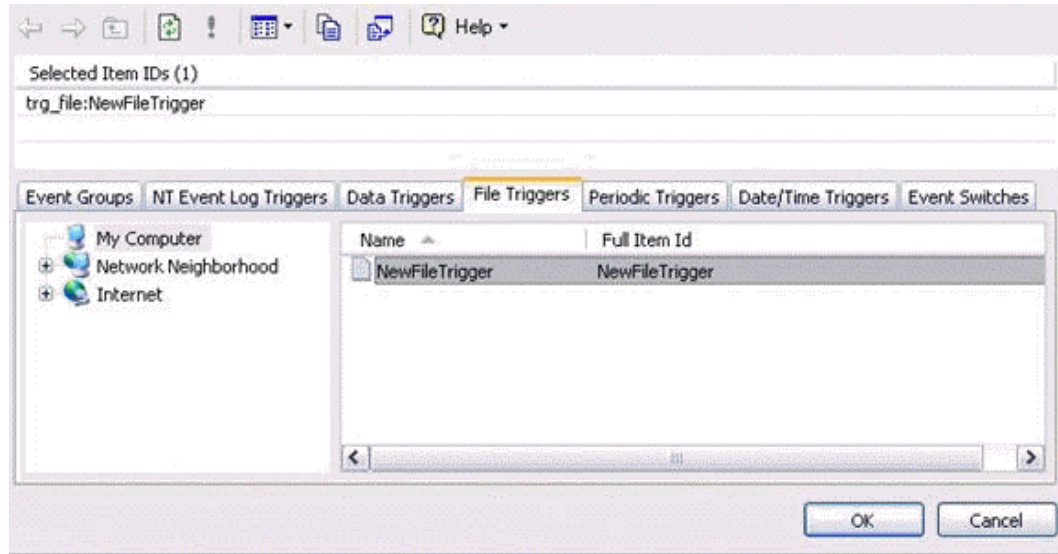
- Create and edit triggers.
- Create folders for triggers.
- Provides global management of event triggers.
- Triggers can be accessed over a network.
- Bases on existing trigger functionality used in ScriptWorX and ReportWorX.
- Client DLL exposes an easy-to-use automation interface.

Events Triggers are executed based on one or more of the following types of triggers:

- Event Groups
- Event Switches
- Date/Time Triggers
- Periodic Triggers (configuration is hidden by default)
- Data Triggers
- Alarm Triggers
- File Triggers
- NT Event Triggers
- Database Triggers

Once you have configured event triggers, they can be accessed from many applications via the appropriate tabs in the Unified Data Browser, as shown in the figure below.

Selecting Event Triggers from the Unified Data Browser



[Contents](#)

[Event Triggers](#)

[Event Group Item Properties](#)

[Event Switches](#)

[Event Switch Item Properties](#)

Event Groups

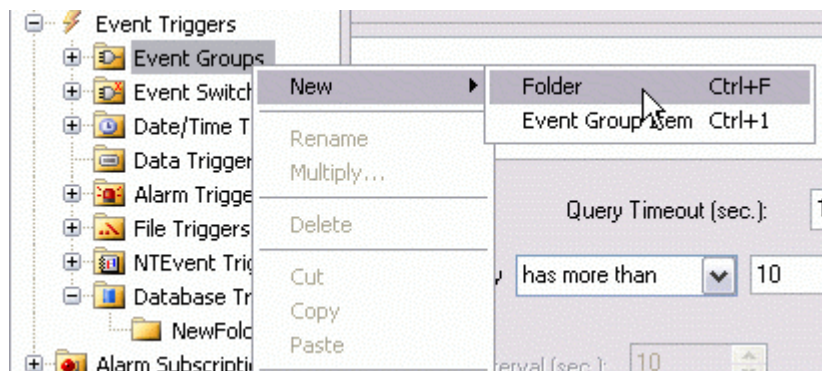
The **Event Groups** tree control in the Unified Data Manager enables you to set up groups of event triggers, which determine when (or on what condition) events will be executed.

Creating a New Event Group Folder

Event groups are organized in a tree structure of folders and event group tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new event group folder:

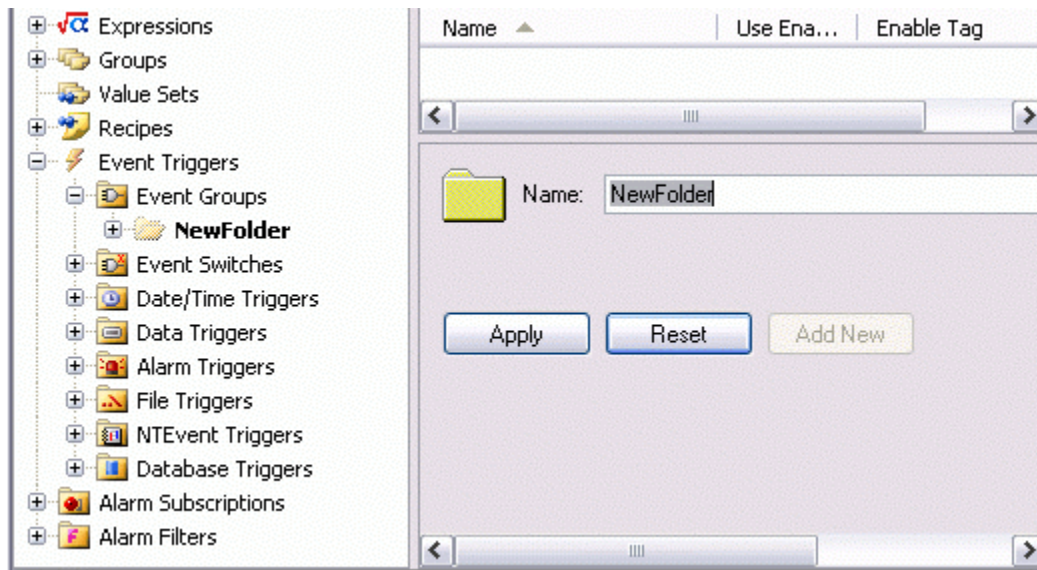
1. Right-click on the **Event Groups** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New Event Group Folder



- The properties dialog for the new event group folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Event Group Folder



- In the **Name** field, type a name for the new folder.
- When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Event Groups** tree control.

Creating a New Event Group Item

To create a new event group item:

- Right-click on the **Event Groups** tree control of the Configurator and select **New > Event Group Item** from the pop-up menu, as shown in the figure below.

Creating a New Event Group Item



The properties dialog for the new event group item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Event Group Item

2. In the **Name** field, type a name for the new event group.
3. In the **Description** field of the **Event Group Properties** tab, you can type an optional description for the new event group.
4. When you have finished configuring event group properties, click the **Apply** button. The new event group item appears under the **Event Groups** tree control.

[Contents](#)

[Event Triggers](#)

[Event Group Item Properties](#)

[Event Switches](#)

[Event Switch Item Properties](#)

Event Group Item Properties

The properties dialog for event group items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Event Group Properties
- Event Group Options

Event Group Properties

An **Event Group** simplifies work with a large set of event triggers, which determine when (or on what condition) events will be executed. In the **Event Group Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the event group.
- **Description:** Enter a description for the event group (optional).
- **Enable on Tag:** Checking this check box links the activation of the

event group to a specified data tag value. Enter the tag name in the **Enable Tag** field.

- **Enable Tag:** Specify a tag on which to enable the event group. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new event group item to be configured.

Event Group Properties

The screenshot shows a dialog box titled 'Event Group Properties' with two tabs: 'Event Group Properties' and 'Event Group Options'. The 'Event Group Properties' tab is active. It contains the following fields and controls:

- Name:** A text box containing 'NewEventGroup'.
- Description:** A text box with a vertical scrollbar.
- Trigger Conditions:** A section containing a checkbox labeled 'Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)'. The checkbox is checked.
- Enable Tag:** A text box with a vertical scrollbar and a small button with three dots to its right.

At the bottom of the dialog box, there are three buttons: 'Apply', 'Reset', and 'Add New'.

Event Group Options

An **event group data tag** can contain an unlimited number of event trigger tags. Each event group is represented as a data tag. In the **Event Group Options** tab, shown in the figure below, you can specify a list of trigger tags that will be included in the event group data tag.

Click the **Add** button to launch the **Unified Data Browser**, which enables you to choose different event trigger tags. Once a trigger tag is added to the list, you can click the **Remove** button to delete the tag from the list, or you can click the **Edit** button to change the selected tag. You can also click the **Move Up** and **Move Down** buttons to change the order of the tag in the list.

Note: For more information about the Unified Data Browser, please refer to the Unified Data Browser help documentation.

Event Group Options



[Contents](#)

[Event Triggers](#)

[Event Group Item Properties](#)

[Event Switches](#)

[Event Switch Item Properties](#)

Event Switches

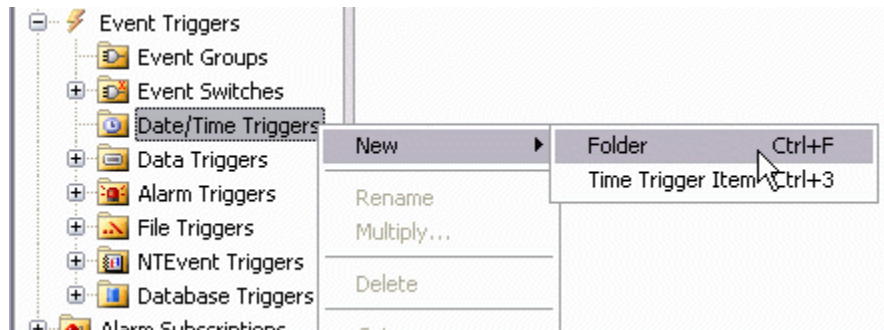
Event Switches are simple connection objects with one input data tag and one output data tag. Each event switch will manage a connection between one input and output data tag (i.e. will read data from the input data tag and write it to the output data tag). Since these event switches are implemented as Boolean data tags, other applications can switch their connection to on/off states.

Creating a New Event Switch Folder

Event switches are organized in a tree structure of folders and event switch tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new event switch folder:

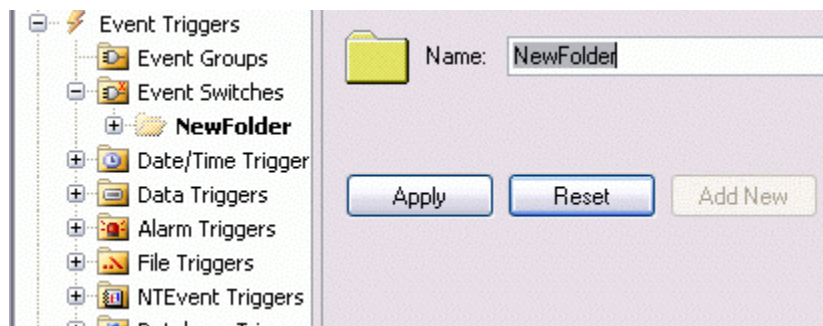
1. Right-click on the **Event Switches** tree control of the Configurator and click **New** and then select the **Folder** command from the context menu, as shown in the figure below.

Creating a New Event Switch Folder



2. The properties dialog for the new event switch folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Event Switch Folder



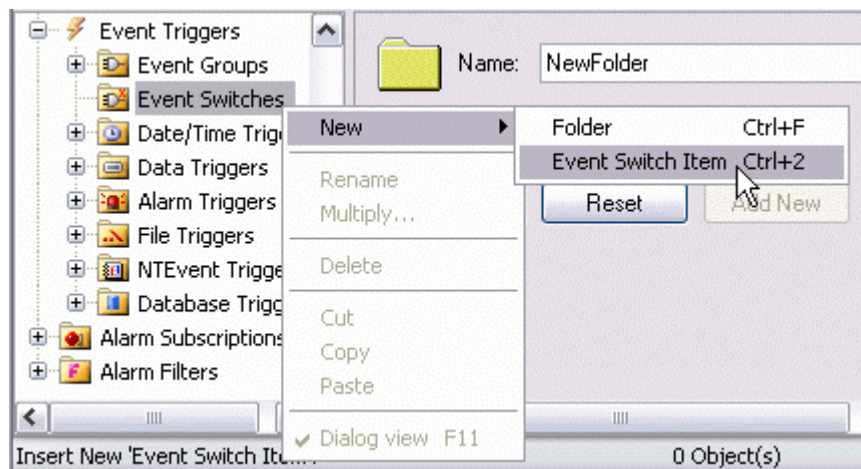
3. In the Name field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the Apply button. The new folder appears under the Event Switches tree control.

Creating a New Event Switch Item

To create a new event switch item:

1. Right-click on the Event Switches tree control of the Configurator and select New > Event Switch Item from the pop-up menu, as shown in the figure below.

Creating a New Event Switch Item



The properties dialog for the new event switch item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Event Switch Item

2. In the **Name** field, type a name for the new event switch.
3. In the **Description** field of the **Event Switch Properties** tab, you can type an optional description for the new event switch.
4. When you have finished configuring event switch properties, click the **Apply** button.

The new event switch item appears under the Event Switches tree control.

[Contents](#)

[Event Triggers](#)

[Event Group Item Properties](#)

[Event Switches](#)

[Event Switch Item Properties](#)

Event Switch Item Properties

The properties dialog for event switch items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Event Switch Properties
- Event Switch Options

Event Switch Properties

Event Switch Properties

An **Event Switch** is a simple connection object with one input data tag and one output data tag. Each event switch will manage a connection between one input and output data tag (i.e. will read data from the input data tag and write it to the output data tag). Since these event switches are implemented as Boolean data tags, other applications can switch their connection to on/off states. In the **Event Switch Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the event switch.
- **Description:** Enter a description for the event switch (optional).
- **Enable on Tag:** Checking this check box links the activation of the event switch to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the event switch. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new event switch item to be configured.

Event Switch Properties

Event Switch Options

An event switch reads data from one input data tag (trigger tag) and writes it to one output data tag (index tag). In the **Event Switch Options** tab, shown in the figure below, you can specify a list of input tags that can be read by the switch and the output tag to which the switch will write data.

In the **Index Tag** field, you must specify an output tag for the event switch. Click the ... button to launch the **Unified Data Browser**, which enables you to choose an event switch output tag.

Under **Triggers**, you must also specify at least one input data tag that will be read by the event switch. Click the **Add** button to launch the **Unified Data Browser**, which enables you to choose different input tags. Once an input tag is added to the list, you can click the **Remove** button to delete the tag from the list, or you can click the **Edit** button to change the selected tag. You can also click the **Move Up** and **Move Down** buttons to change the order of the tag in the list.

Note. You can specify multiple input tags from which the event switch can read, but each input tag is written to only one output tag. For more information about the Unified Data Browser, please refer to the Unified Data Browser help documentation.

Event Switch Options

Event Switch Properties | Event Switch Options

Index Tag: ...

Triggers:

Index	Name

Add... Remove Edit... Move Up Move Down

Apply Reset Add New

[Contents](#)

[Event Triggers](#)

[Event Group Item Properties](#)

[Event Switches](#)

[Event Switch Item Properties](#)

Triggers

Date/Time Triggers

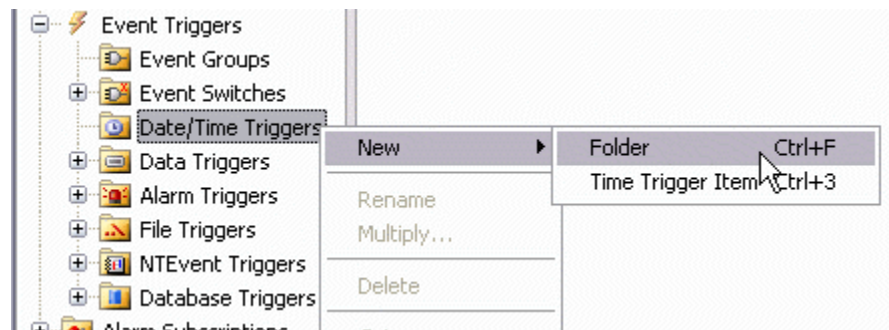
A **Date /Time Trigger** executes an event periodically according to a specified recurrence pattern (i.e. daily, weekly, monthly, or yearly).

Creating a New Time Trigger Folder

Time triggers are organized in a tree structure of folders and time trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new time trigger folder:

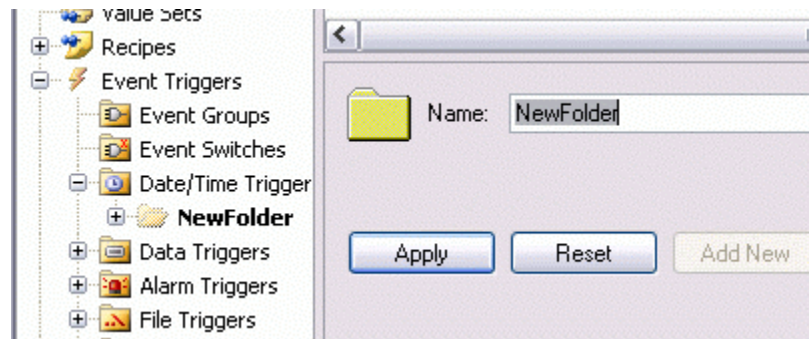
1. Right-click on the **Date/Time Triggers** tree control of the Configurator click on **New** and then select the **Folder** command from the context menu, as shown in the figure below.

Creating a New Time Trigger Folder



2. The properties dialog for the new time trigger folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Time Trigger Folder



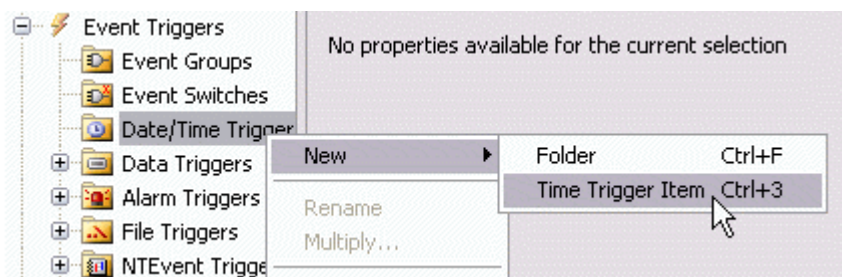
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Date/Time Triggers** tree control.

Creating a New Time Trigger Item

To create a new time trigger item:

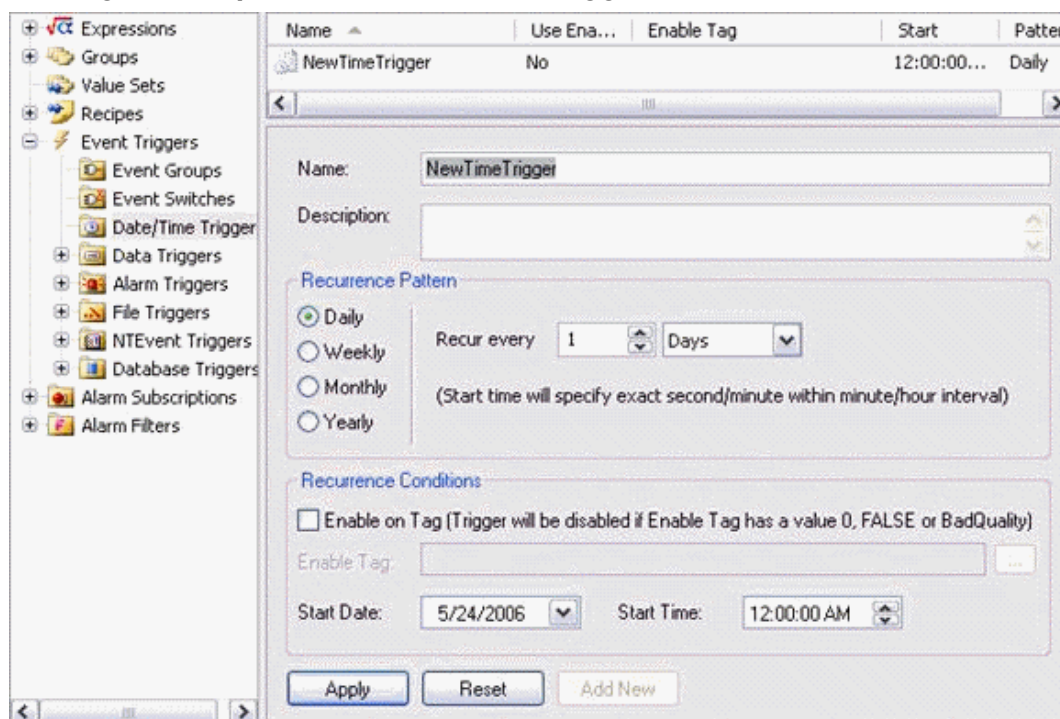
1. Right-click on the **Date/Time Triggers** tree control of the Configurator and select **New > Time Trigger Item** from the pop-up menu, as shown in the figure below.

Creating a New Time Trigger Item



- The properties dialog for the new time trigger item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Time Trigger Item



- In the **Name** field, type a name for the new time trigger.
- In the **Description** field, you can type an optional description for the new time trigger.
- When you have finished configuring time trigger properties, click the **Apply** button. The new time trigger item appears under the **Date/Time Triggers** tree control.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Time Trigger Item Properties

A time trigger executes an event periodically according to a specified recurrence pattern (i.e. daily, weekly, monthly, or yearly). Configure the following settings for a time trigger, as shown in the figure below.

Time Trigger Properties

The screenshot displays the 'Time Trigger Properties' dialog box. On the left is a tree view with categories like Expressions, Groups, Value Sets, Recipes, Event Triggers, Data Triggers, Alarm Triggers, File Triggers, NTEvent Triggers, Database Triggers, Alarm Subscriptions, and Alarm Filters. The 'Date/Time Trigger' is selected under Event Triggers. The main panel shows the configuration for a trigger named 'NewTimeTrigger'. It includes a 'Description' field, a 'Recurrence Pattern' section with radio buttons for Daily (selected), Weekly, Monthly, and Yearly. The 'Daily' pattern is set to 'Recur every 1 Days'. Below this is the 'Recurrence Conditions' section with a checkbox for 'Enable on Tag' (unchecked). At the bottom, the 'Start Date' is set to 5/24/2006 and the 'Start Time' is 12:00:00 AM. Buttons for 'Apply', 'Reset', and 'Add New' are at the bottom right.

- **Name:** Enter a name for the time trigger.
- **Description:** Enter a description for the time trigger (optional).
- **Start Date/Time:** Specifies a start date and a start time for trigger execution. Click the down arrow to select a date from the calendar.
- **Recurrence Pattern:** Specifies the frequency of the periodic event execution (daily, weekly, monthly, or yearly). See the sections below for information about recurrence patterns.

- **Enable on Tag:** Checking this check box links the recurrence of a time trigger to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the recurrence condition. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality).
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new time trigger to be configured.

Daily Recurrence Pattern

The daily recurrence pattern allows you to set up a time block for a daily recurring period for event execution, as shown in the figure below. Specify a start date and a start time for trigger execution, and then specify the frequency of daily execution every weekday or every X number of days.

Daily Trigger Options

Name:

Description:

Recurrence Pattern

☒ Daily
☐ Weekly
☐ Monthly
☐ Yearly

Recur every

(Start time will specify exact second/minute within minute/hour interval)

Recurrence Conditions

☒ Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)

Enable Tag: ...

Start Date: Start Time:

Weekly Recurrence Pattern

The weekly recurrence pattern allows you to set up a time block for a weekly recurring period for event execution, as shown in the figure below. Specify a start date and a start time for trigger execution, and then check the day on which you want to execute the event.

Weekly Trigger Options

Name:

Description:

Recurrence Pattern

☐ Daily
☒ Weekly
☐ Monthly
☐ Yearly

Recur every week on:

☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday
☐ Thursday ☐ Friday ☐ Saturday

Recurrence Conditions

☐ Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)

Enable Tag:

Start Date: Start Time:

Monthly Recurrence Pattern

The monthly recurrence pattern allows you to set up a time block for a monthly recurring period for event execution, as shown in the figure below. Specify a start date and a start time for trigger execution, and then specify the frequency of monthly execution (i.e. which day each month).

Monthly Trigger Options

Name:

Description:

Recurrence Pattern

☐ Daily
☐ Weekly
☒ Monthly
☐ Yearly

☒ Day of every month(s)
☐ The day of every month(s)

Recurrence Conditions

☐ Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)

Enable Tag:

Start Date: Start Time:

Yearly Recurrence Pattern

The yearly recurrence pattern allows you to set up a time block for a yearly

recurring period for event execution, as shown in the figure below. Specify a start date and a start time for trigger execution, and then specify the frequency of yearly execution (i.e. which day each month).

Yearly Trigger Options

Name:

Description:

Recurrence Pattern

☐ Daily
☐ Weekly
☐ Monthly
☒ Yearly

☒ Every
☐ The day of

Recurrence Conditions

☐ Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)

Enable Tag:

Start Date: Start Time:

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Periodic Triggers

A **Periodic Trigger** executes an event periodically based on a specified number of seconds.

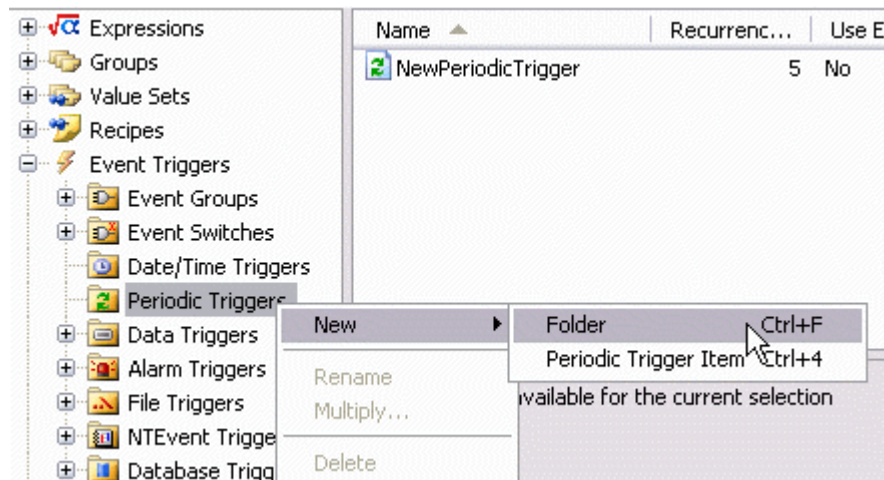
Note: Checking the **GENESIS32 V8.x Compatibility Mode** check box in the **Options** dialog box enables you to configure periodic triggers, which are hidden by default.

Creating a New Periodic Trigger Folder

Periodic triggers are organized in a tree structure of folders and time trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new periodic trigger folder:

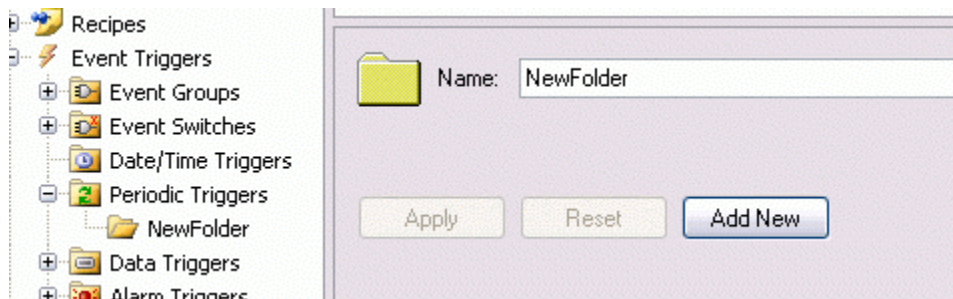
1. Right-click on the **Periodic Triggers** tree control of the Configurator and select **New**, and then the command from the context menu, as shown in the figure below.

Creating a New Periodic Trigger Folder



2. The properties dialog for the new periodic trigger folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Periodic Trigger Folder



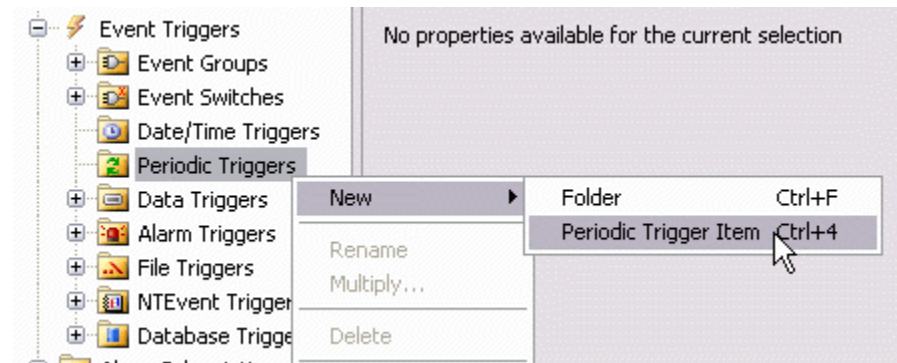
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Periodic Triggers** tree control.

Creating a New Periodic Trigger Item

To create a new periodic trigger item:

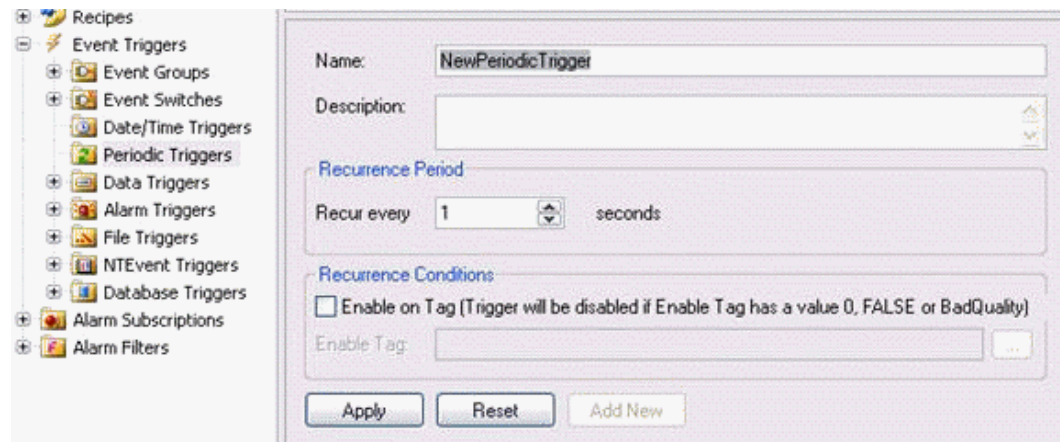
1. Right-click on the **Periodic Triggers** tree control of the Configurator and select **New > Periodic Trigger Item** from the pop-up menu, as shown in the figure below.

Creating a New Periodic Trigger Item



5. The properties dialog for the new periodic trigger item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Periodic Trigger Item



6. In the **Name** field, type a name for the new periodic trigger.
7. In the **Description** field, you can type an optional description for the new periodic trigger.
8. When you have finished configuring periodic trigger properties, click the **Apply** button. The new time trigger item appears under the **Date/Time Triggers** tree control.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Periodic Trigger Item Properties

A **Periodic Trigger** executes an event periodically based on a specified number of seconds. Configure the following settings for a periodic trigger, as shown in the figure below.

Periodic Trigger Properties

The screenshot shows the 'Periodic Trigger Properties' dialog box. On the left is a tree view with the following structure:

- Recipes
 - Event Triggers
 - Event Groups
 - Event Switches
 - Date/Time Triggers
 - Periodic Triggers** (selected)
 - Data Triggers
 - Alarm Triggers
 - File Triggers
 - NTEvent Triggers
 - Database Triggers
 - Alarm Subscriptions
 - Alarm Filters

The right pane contains the following fields and controls:

- Name:** NewPeriodicTrigger
- Description:** (empty text box)
- Recurrence Period:**
 - Recur every: 1 seconds
- Recurrence Conditions:**
 - ☐ Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)
 - Enable Tag: (empty text box with a selection button '...')
- Buttons: Apply, Reset, Add New

- **Name:** Enter a name for the periodic trigger.
- **Description:** Enter a description for the periodic trigger (optional).
- **Recurrence Period:** Specifies the frequency of the periodic event execution (in seconds).
- **Enable on Tag:** Checking this check box links the recurrence of a periodic trigger to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the recurrence condition. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality).
- **Apply:** Saves all changes to the configuration database.

- **Reset:** Clears all recently added information.
- **Add New:** Creates a new periodic trigger to be configured.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Data Triggers

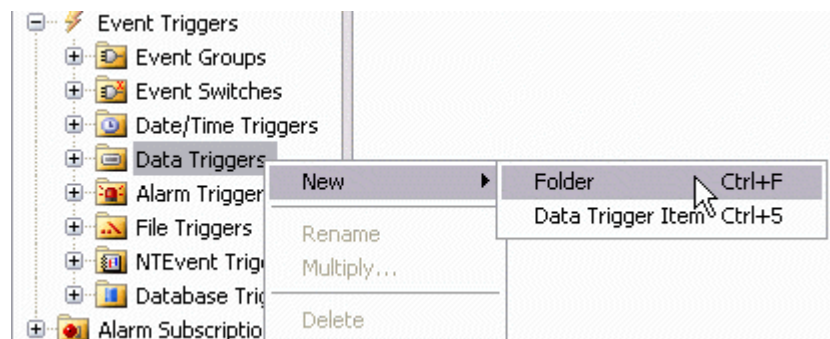
A **Data Trigger** executes an event every time a tag becomes true or false.

Creating a New Data Trigger Folder

Data triggers are organized in a tree structure of folders and data trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new data trigger folder:

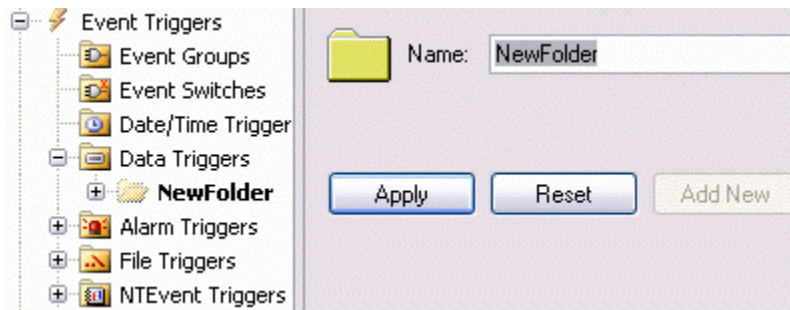
1. Right-click on the **Data Triggers** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New Data Trigger Folder



2. The properties dialog for the new data trigger folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Data Trigger Folder



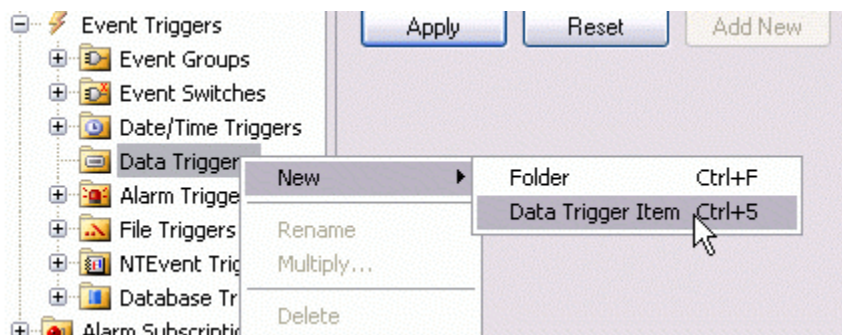
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Data Triggers** tree control.

Creating a New Data Trigger Item

To create a new data trigger item:

1. Right-click on the **Data Triggers** tree control of the Configurator and select **New > Data Trigger Item** from the pop-up menu, as shown in the figure below.

Creating a New Data Trigger Item



5. The properties dialog for the new data trigger item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Data Trigger Item

The screenshot shows a 'Data Trigger Properties' dialog box. It has two tabs: 'Data Trigger Properties' and 'Data Trigger Options'. The 'Data Trigger Properties' tab is active. It contains the following fields and controls:

- Name:** A text box containing 'NewDataTrigger'.
- Description:** A text box that is empty.
- Trigger Conditions:**
 - A checkbox labeled 'Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)'. The checkbox is currently unchecked.
 - Below the checkbox is an 'Enable Tag' text box, which is empty, followed by a small button with three dots (a dropdown menu).

At the bottom of the dialog, there are three buttons: 'Apply', 'Reset', and 'Add New'.

6. In the **Name** field, type a name for the new data trigger.
7. In the **Description** field, you can type an optional description for the new data trigger.
8. When you have finished configuring data trigger properties, click the **Apply** button. The new data trigger item appears under the **Data Triggers** tree control.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Data Trigger Item Properties

The properties dialog for data trigger items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Data Trigger Properties
- Data Trigger Options

Data Trigger Properties Tab

A **Data Trigger** executes an event every time a tag becomes true or false. In the **Data Trigger Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the data trigger.
- **Description:** Enter a description for the data trigger (optional).
- **Enable on Tag:** Checking this check box links the activation of the data trigger to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the data trigger. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new data trigger item to be configured.

Data Trigger Properties

Data Trigger Options

In the **Data Trigger Options** tab, shown in the figure below, configure the

following settings:

- **Execute Condition:** The trigger executes an event on any data tag change, or when the specified data tag changes to TRUE or FALSE.
- **Data Tag:** If the trigger executes on a data tag change, you can either type a data tag directly into this field, or you can click the ... button to the right of this field to open the Unified Data Browser, where you can select a data tag.

Data Trigger Options

The screenshot shows a dialog box titled "Data Trigger Options" with two tabs: "Data Trigger Properties" and "Data Trigger Options". The "Data Trigger Options" tab is active. Inside the dialog, there are three radio buttons under the "Execute Condition:" label: "On any data tag change" (which is selected), "When data tag changes to TRUE", and "When data tag changes to FALSE". Below these is a "Data Tag:" label followed by a text input field and a button with three dots "...". At the bottom of the dialog are three buttons: "Apply", "Reset", and "Add New".

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Alarm Triggers

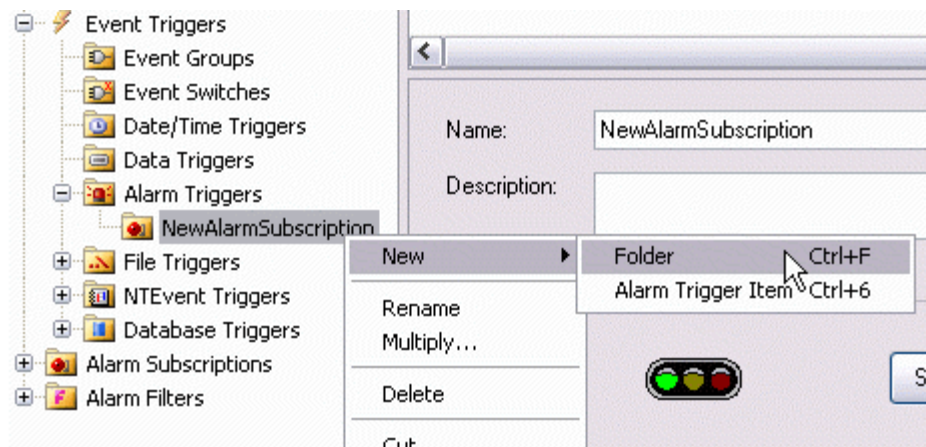
An **Alarm Trigger** executes an event when a certain alarm occurs. To configure an alarm trigger, you must first create a new alarm subscription to correspond with the alarm trigger.

Creating a New Alarm Trigger Folder

Alarm triggers are organized in a tree structure of folders and alarm trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new alarm trigger folder:

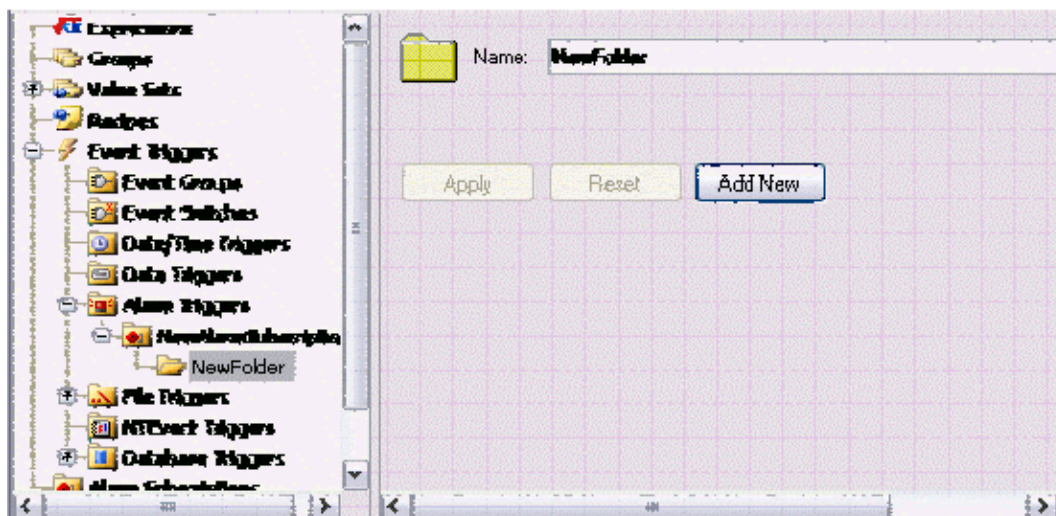
1. Right-click on an alarm trigger subscription in the **Alarm Triggers** tree control of the Configurator, click **New** and then select the **Folder** command from the context menu, as shown in the figure below.

Creating a New Alarm Trigger Folder



1. The properties dialog for the new alarm trigger folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Alarm Trigger Folder

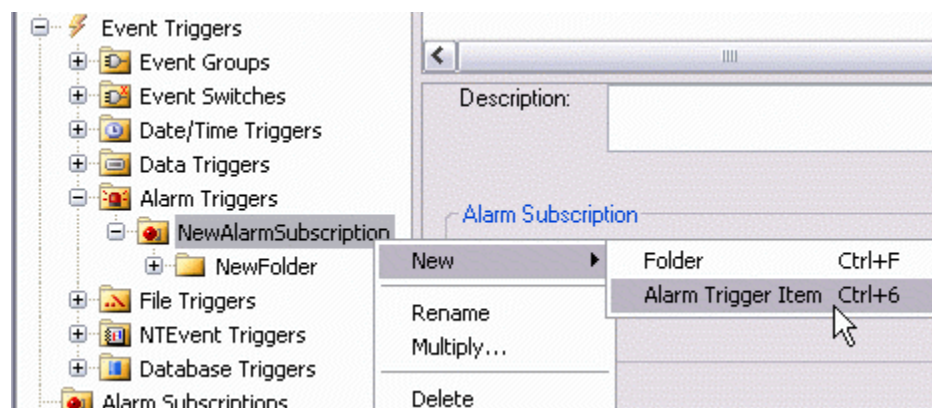


2. In the **Name** field, type a name for the new folder.
3. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Alarm Triggers** tree control.\

To create a new alarm trigger item:

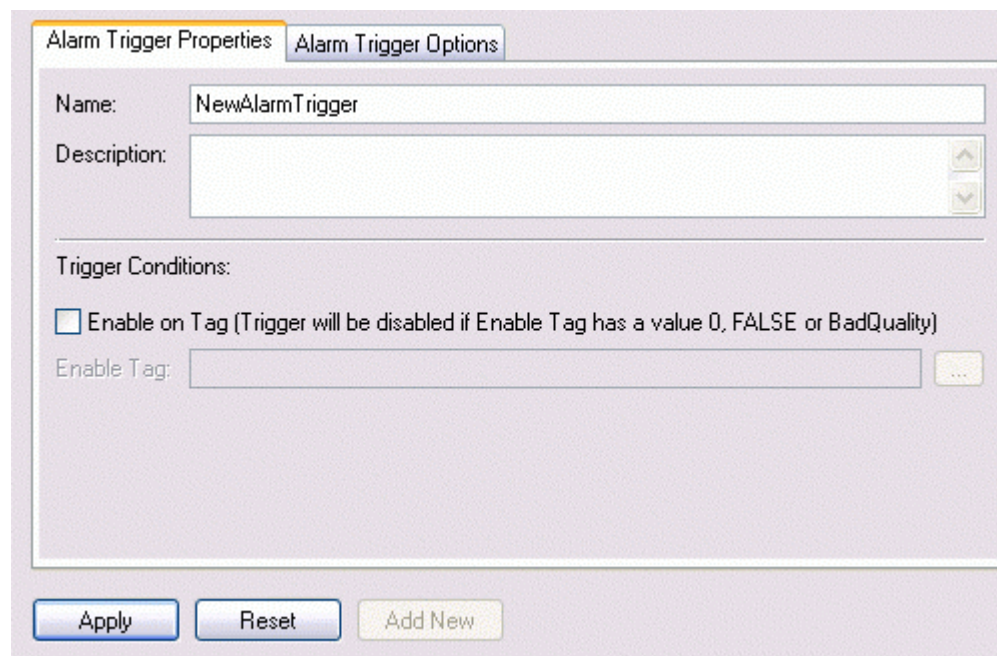
1. Right-click on an alarm trigger subscription or an alarm trigger folder in the **Alarm Triggers** tree control of the Configurator and select **New > Alarm Trigger Item** from the pop-up menu, as shown in the figure below.

Creating a New Alarm Trigger Item



2. The properties dialog for the new alarm trigger item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Alarm Trigger Item



3. In the Name field, type a name for the new alarm trigger item.
4. In the **Description** field, you can type an optional description for the

new alarm trigger item.

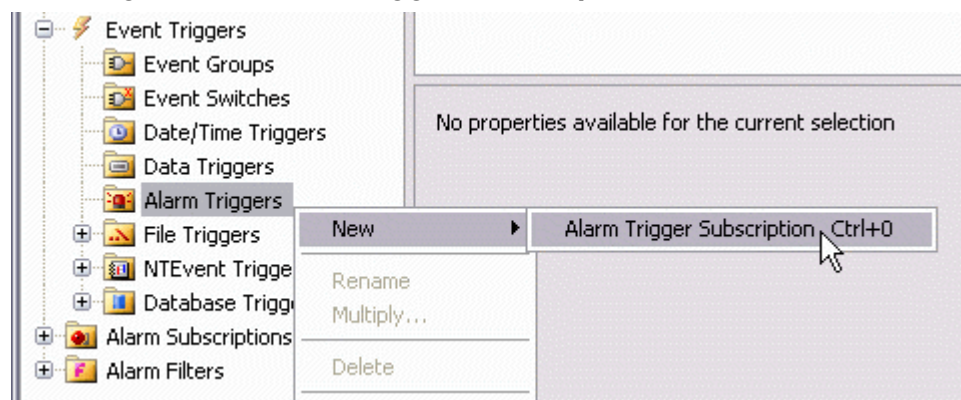
- When you have finished configuring alarm trigger item properties, click the Apply button. The new alarm trigger item appears under the **Alarm Triggers** tree control.

Creating a New Alarm Trigger Subscription

To create a new alarm trigger subscription:

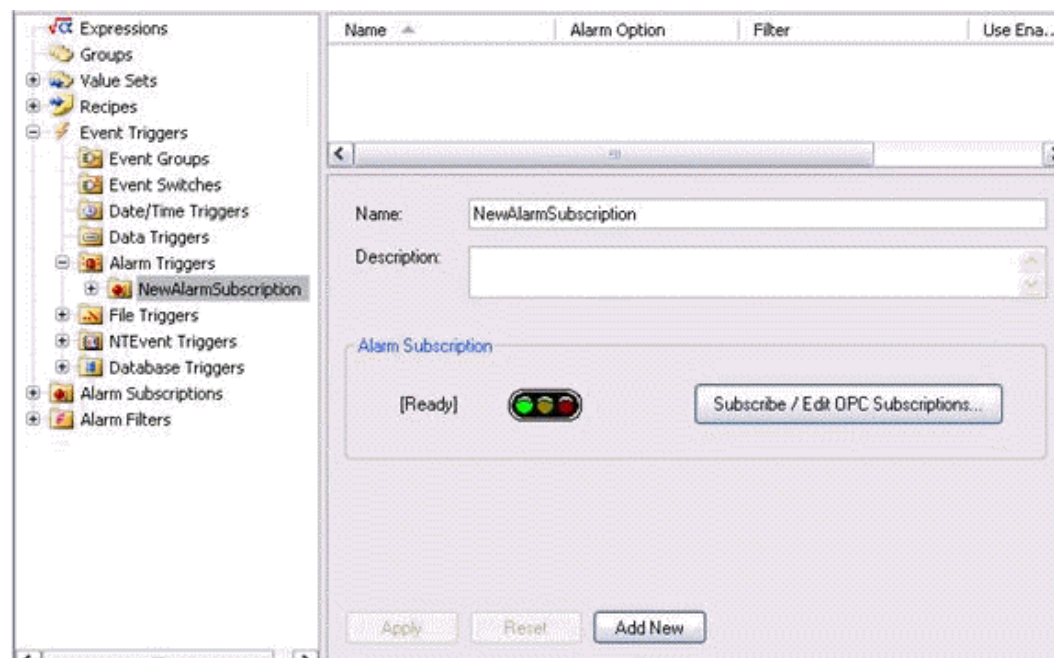
- Right-click on the **Alarm Triggers** tree control of the Configurator and select **New > Alarm Trigger Subscription** from the pop-up menu, as shown in the figure below.

Creating a New Alarm Trigger Subscription



- The properties dialog for the new alarm trigger subscription appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Alarm Trigger Subscription



- In the **Name** field, type a name for the new alarm trigger subscription.

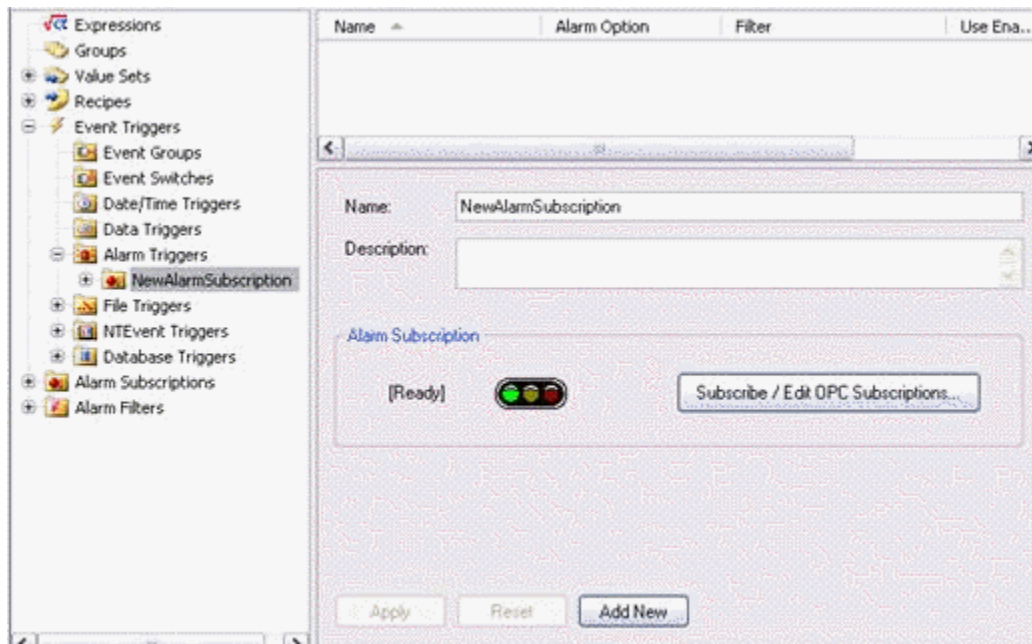
4. In the **Description** field, you can type an optional description for the new alarm trigger subscription.
5. When you have finished configuring alarm trigger subscription properties, click the **Apply** button. The new alarm trigger properties appears under the **Alarm Triggers** tree control.

Alarm Trigger Subscription Properties

An **Alarm Trigger** executes an event when a certain alarm occurs. To configure an alarm trigger, you must first create a new alarm subscription to correspond with the alarm trigger:

- **Name:** Enter a name for the alarm trigger subscription.
- **Description:** Enter a description for the alarm trigger subscription (optional).
- **Alarm Subscription:** By default the traffic light icon is red. After you set up a subscription to an alarm server, the traffic light icon turns green to indicate that it is ready for use. Clicking the **Subscribe / Edit** **OPC Subscriptions** button in the alarm subscriptions field opens the **Subscription Properties** dialog box. For more information about configuring alarm subscription properties, please see the "Alarm Subscriptions" section.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new alarm trigger subscription item to be configured.

Alarm Trigger Subscription Properties



[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Alarm Trigger Item Properties

The properties dialog for alarm trigger items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Alarm Trigger Properties
- Alarm Trigger Options

Alarm Trigger Properties Tab

An **Alarm Trigger** executes an event when a certain alarm occurs based on the configured alarm trigger subscription. In the **Alarm Trigger Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the alarm trigger.
- **Description:** Enter a description for the alarm trigger (optional).
- **Enable on Tag:** Checking this check box links the activation of the alarm trigger to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the alarm trigger. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new alarm trigger item to be configured.

Alarm Trigger Properties

Alarm Trigger Options Tab

In the **Alarm Trigger Options** tab, shown in the figure below, configure the following settings. The trigger executes based on the current alarm subscription/filter properties upon one of the following conditions:

- **Alarm /Event:** The trigger is executed when an alarm or an event occurs.
- **Return to Normal:** The trigger is executed when the values return to normal after an alarm has occurred.
- **Acknowledgement:** The trigger is executed when an alarm is acknowledged.
- **Alarm Filter:** To specify an alarm filter, click the **Edit** button to the right of this field to select an alarm filter from the Unified Data Browser. For more information about alarm filters, please see the "Alarm Filters" section.

Alarm Trigger Options

Alarm Trigger Properties Alarm Trigger Options

Execute Condition

☒ On Alarm/Event

☐ On Return to normal

☐ On Acknowledgement

Alarm Filter

x=1 Edit...

Apply Reset Add New

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

File Triggers

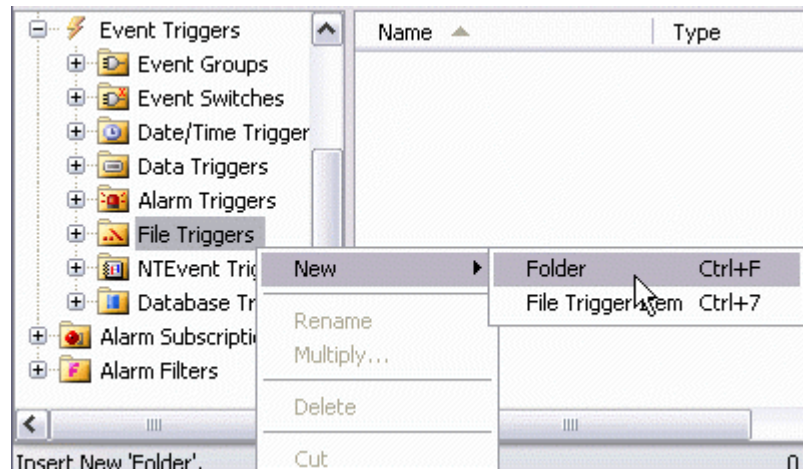
A **File Trigger** fires when specified events occur for a selected directory.

Creating a New File Trigger Folder

File triggers are organized in a tree structure of folders and file trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new file trigger folder:

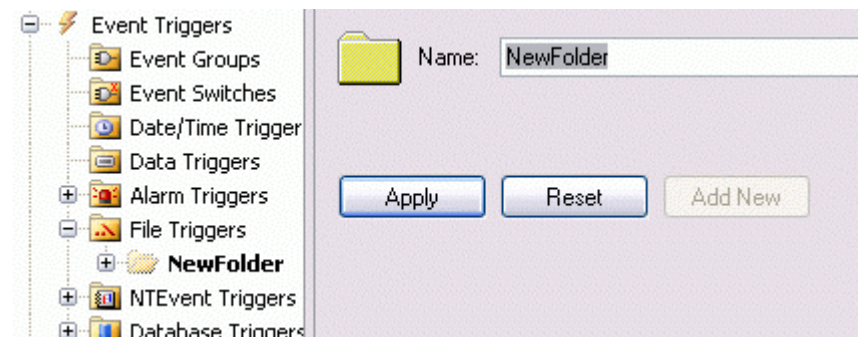
1. Right-click on the **File Triggers** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New File Trigger Folder



2. The properties dialog for the new file trigger folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New File Trigger Folder



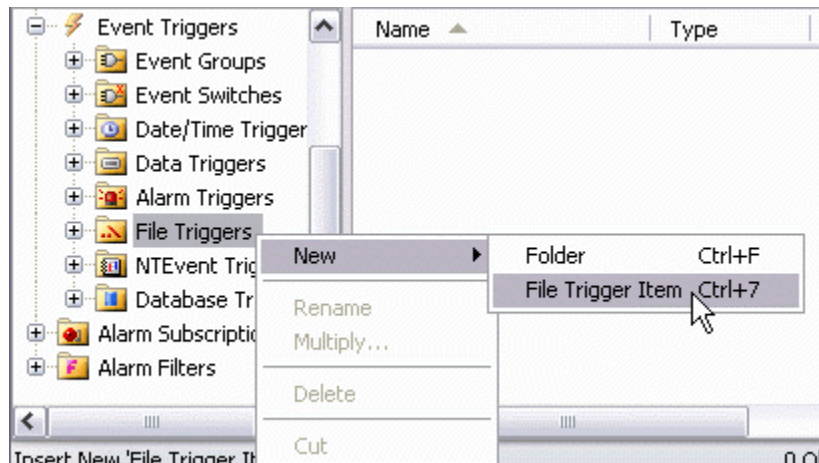
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **File Triggers** tree control.

Creating a New File Trigger Item

To create a new file trigger item:

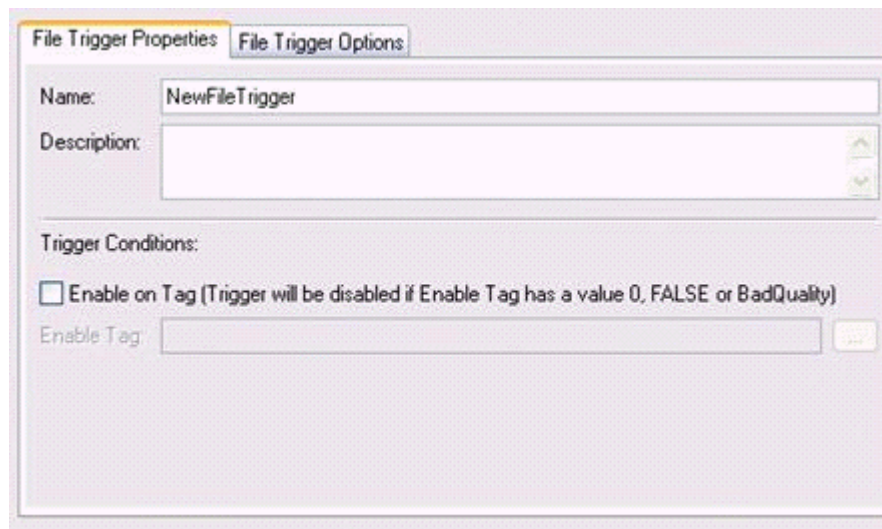
1. Right-click on the **File Triggers** tree control of the Configurator and select **New > File Trigger Item** from the pop-up menu, as shown in the figure below.

Creating a New File Trigger Item



2. The properties dialog for the new file trigger item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the File Trigger Item



3. In the **Name** field, type a name for the new file trigger.
4. In the **Description** field, you can type an optional description for the new file trigger.
5. When you have finished configuring file trigger properties, click the **Apply** button. The new file trigger item appears under the **File Triggers** tree control.

File Trigger Item Properties

The properties dialog for file trigger items, shown in the figure below, contains the following tabs, which are described in the sections below:

- File Trigger Properties
- File Trigger Options

File Trigger Properties

A **File Trigger** fires when specified events occur for a selected directory. In the **File Trigger Properties** tab, shown in the figure below, configure the following

settings:

- **Name:** Enter a name for the file trigger.
- **Description:** Enter a description for the file trigger (optional).
- **Enable on Tag:** Checking this check box links the activation of the file trigger to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the file trigger. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new file trigger item to be configured.

File Trigger Properties

The screenshot shows a dialog box titled 'File Trigger Properties'. It has two tabs: 'File Trigger Properties' (selected) and 'File Trigger Options'. The 'File Trigger Properties' tab contains the following fields:

- Name:** A text box containing 'NewFileTrigger'.
- Description:** A text box with a vertical scrollbar.
- Trigger Conditions:** A section containing a checkbox labeled 'Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)'. The checkbox is currently unchecked.
- Enable Tag:** A text box next to the checkbox, which is currently empty. To the right of the text box is a button with three dots '...'.

File Trigger Options

In the **File Trigger Options** tab, shown in the figure below, configure the following settings:

- **Folder To Scan:** To browse for the target directory, click the ... button.
- **Fire Conditions:** Select the relevant **Fire Conditions** by checking the appropriate check boxes, as described below.
- **Ignore actions:** Specifies the amount of time to wait (in seconds) between subsequent actions on the same file.
- **Event Delay:** Specifies the amount of time (in seconds) to allow between subsequent events occurring in the directory.
- **Polling Rate:** Specifies how often (in seconds) the system will check for changes or events occurring in the directory.

- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new file trigger to be configured.

File Trigger Options

The screenshot shows a dialog box titled 'File Trigger Options'. It has two tabs: 'File Trigger Properties' and 'File Trigger Options'. The 'File Trigger Options' tab is selected. Inside the dialog, there is a 'Name' field containing 'NewFileTrigger', a 'Description' field, and a 'Trigger Conditions' section. The 'Trigger Conditions' section includes a checkbox labeled 'Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)'. Below this checkbox is an 'Enable Tag' field with a dropdown arrow.

Fire Conditions

The file system trigger fires when specified events occur for the directory specified in the **Folder To Scan** field. These events are called **fire conditions**. Choose from the following fire conditions by checking the appropriate check boxes:

- **On File Create:** Fires when a new file is created in the directory.
- **On File Delete:** Fires when a file is removed from the directory.
- **On File Length Change:** Fires when the file size changes.
- **On File Last Write Time Change:** Fires when the "last modified" time/date changes.
- **On File Last Access Time Change:** Fires when the "last accessed" time/date changes.
- **On File "Hidden" Attribute Change:** Fires when the "hidden" status changes.
- **On File "Read-Only" Attribute Change:** Fires when the "read-only" status changes.
- **On Subfolder Create:** Fires when a new subdirectory is created in the directory.
- **On Subfolder Delete:** Fires when a subdirectory is removed from the directory.
- **On Subfolder "Hidden" Attribute Change:** Fires when the "hidden" status changes.

- **On Subfolder "Read-Only" Attribute Change:** Fires when the "read-only" status changes.
- **Subfolder Recursive Monitor:** Fires when changes are made to files in subdirectories.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

NT Event Triggers

An **NT Event Trigger** fires when new entries are posted to the Windows event log.

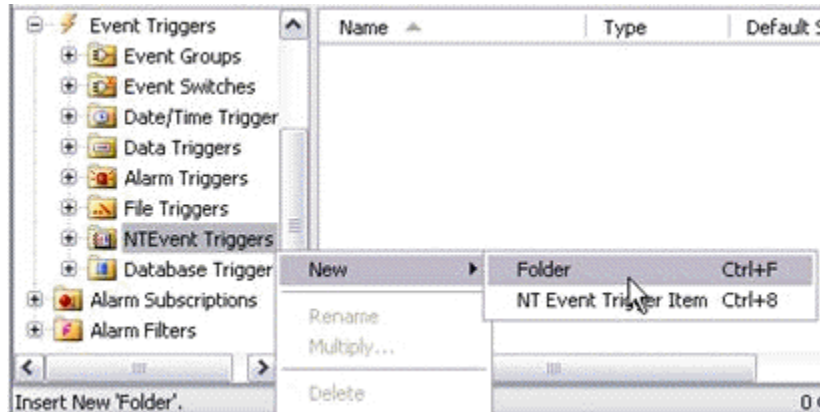
Note: For additional information about NT events, please go to the Windows Event Viewer, which is accessible through the Administrative Tools section in the Windows Control Panel.

Creating a New NT Event Trigger Folder

NT event triggers are organized in a tree structure of folders and NT event trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new NT event trigger folder:

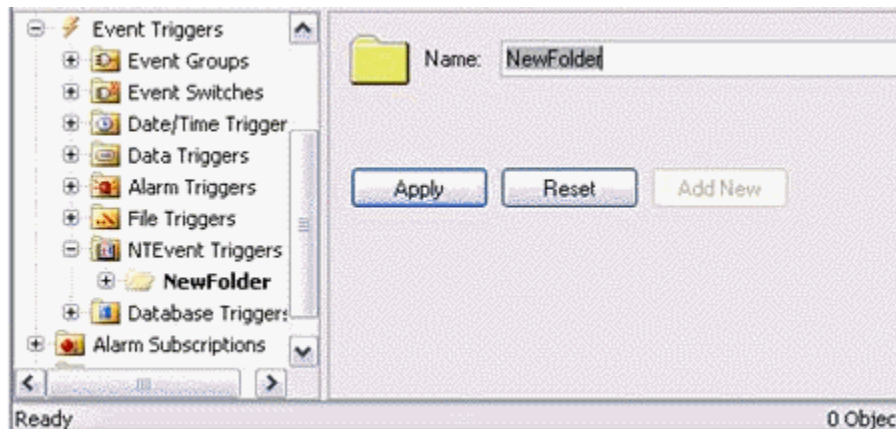
1. Right-click on the **NT Event Triggers** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New NT Event Trigger Folder



2. The properties dialog for the new NT event trigger folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New NT Event Trigger Folder



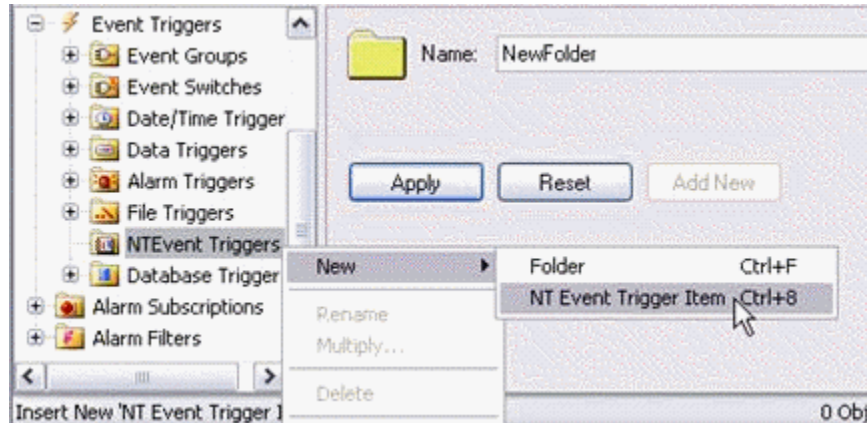
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **NT Event Triggers** tree control.

Creating a New NT Event Trigger Item

To create a new NT event trigger item:

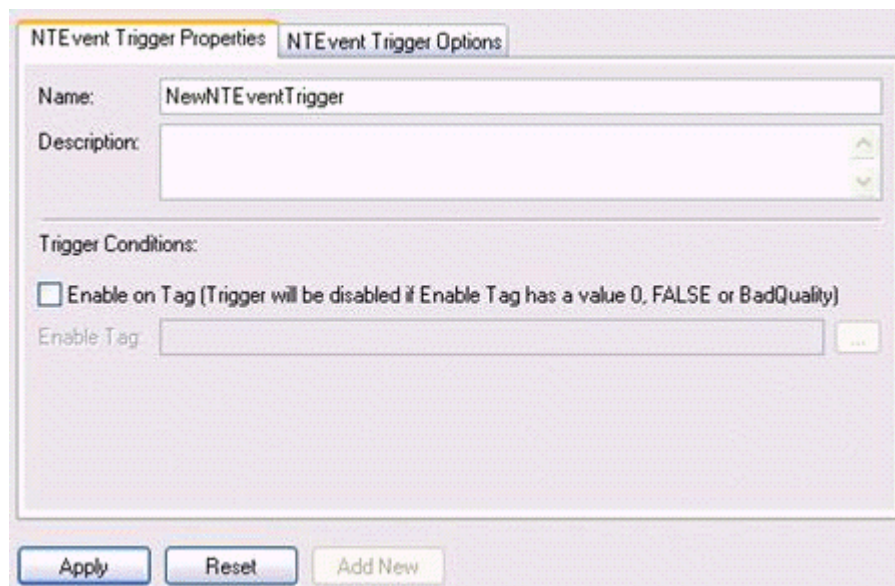
1. Right-click on the **NT Event Triggers** tree control of the Configurator and select **New > NT Event Trigger Item** from the pop-up menu, as shown in the figure below.

Creating a New NT Event Trigger Item



The properties dialog for the new NT event trigger item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the NT Event Trigger Item



2. In the **Name** field, type a name for the new NT event trigger.
3. In the **Description** field, you can type an optional description for the new NT event trigger.
4. When you have finished configuring NT event trigger properties, click the **Apply** button. The new NT event trigger item appears under the **NT Event Triggers** tree control.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

NT Event Trigger Item Properties

The properties dialog for NT event trigger items, shown in the figure below, contains the following tabs, which are described in the sections below:

- NT Event Trigger Properties
- NT Event Trigger Options

An **NT Event Trigger** fires when new entries are posted to the Windows event log.

Note: For additional information about NT events, please go to the Windows Event Viewer, which is accessible through the Administrative Tools section in the Windows Control Panel.

In the **NT Event Trigger Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the NT event trigger.
- **Description:** Enter a description for the NT event trigger (optional).
- **Enable on Tag:** Checking this check box links the activation of the NT event trigger to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the NT event trigger. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new NT event trigger item to be configured.

NT Event Trigger Properties

The screenshot shows the 'NT Event Trigger Properties' dialog box with the 'NT Event Trigger Options' tab selected. The 'Name' field contains 'NewNTEventTrigger'. The 'Description' field is empty. Under 'Trigger Conditions', the checkbox 'Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)' is unchecked. Below this is an 'Enable Tag' field with a dropdown arrow. At the bottom of the dialog are three buttons: 'Apply', 'Reset', and 'Add New'.

NT Event Trigger Options

In the **NT Event Trigger Options** tab, shown in the figure below, choose an **Event Category** and an **Event Subcategory** from the drop-down lists, described below. Then select the relevant **Fire Conditions** by checking the appropriate check boxes.

- **Category:** Select an event category (e.g. Application, Security, or System) from the drop-down list.
- **Subcategory:** Select an event subcategory (i.e. source) from the drop-down list. Subcategories vary according to which event category you selected.
- **Duplicate Events_Triggers:** Select one of the following options: ignore all duplicate events or ignore duplicate events within the last x seconds.
- **Trigger only on event ID.** Fires when a specific event is posted to the Windows event log. You must specify the event ID.

NT Event Trigger Options

Fire Conditions

The NT event trigger fires when new entries are posted to the Windows event log. These events are called **fire conditions**. Choose from the following fire conditions by checking the appropriate check boxes:

- **Error Event Detected:** Fires when a new error event is posted to the Windows event log.
- **Warning Event Detected:** Fires when a new warning event is posted to the Windows event log.
- **Information Event Detected:** Fires when a new information event is posted to the Windows event log.
- **Audit Success Event Detected:** Fires when a success audit event is posted to the Windows event log.
- **Audit Failure Event Detected:** Fires when a failure audit event is posted to the Windows event log.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Database Triggers

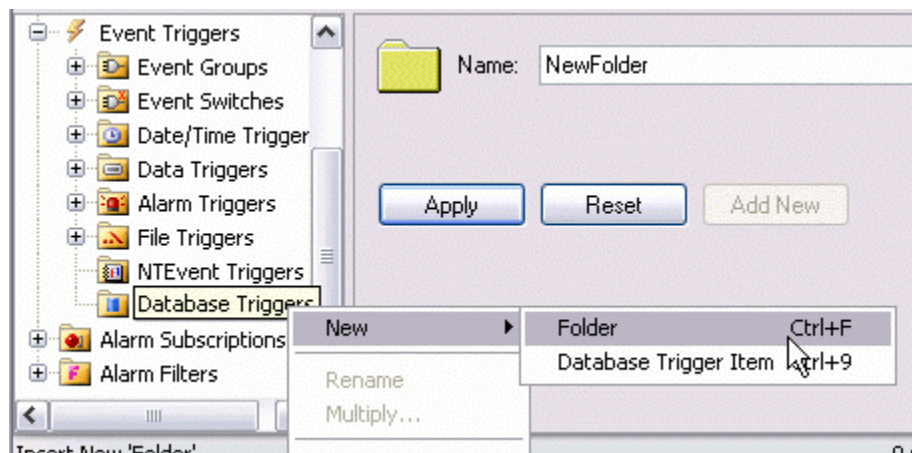
A **Database Trigger** fires when changes are detected in specified database tables.

Creating a New Database Trigger Folder

Database triggers are organized in a tree structure of folders and database trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new database trigger folder:

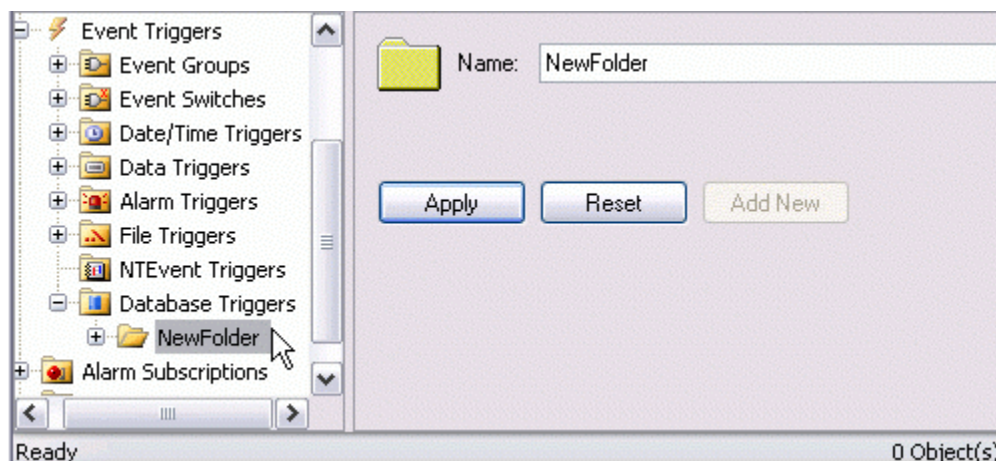
1. Right-click on the **Database Triggers** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New Database Trigger Folder



2. The properties dialog for the new database trigger folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Database Trigger Folder



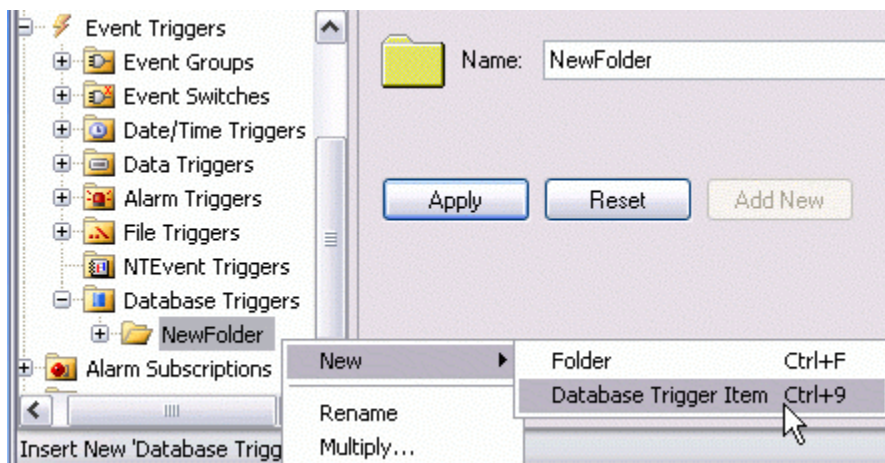
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Database Triggers** tree control.

Creating a New Database Trigger Item

To create a new database trigger item:

1. Right-click on the **Database Triggers** tree control of the Configurator and select **New > Database Trigger Item** from the pop-up menu, as shown in the figure below.

Creating a New Database Trigger Item



2. The properties dialog for the new database trigger item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the Database Trigger Item

Database Trigger Properties Database Trigger Options

Name: NewDatabaseTrigger

Description:

Trigger Conditions:

☐ Enable on Tag (Trigger will be disabled if Enable Tag has a value 0, FALSE or BadQuality)

Enable Tag:

Apply Reset Add New

3. In the **Name** field, type a name for the new database trigger.
4. In the **Description** field, you can type an optional description for the new database.
5. When you have finished configuring database trigger properties, click the **Apply** button. The new database trigger item appears under the **Database Triggers** tree control.

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Database Trigger Item Properties

The properties dialog for database trigger items, shown in the figure below, contains the following tabs, which are described in the sections below:

- Database Trigger Properties
- Database Trigger Options

Database Trigger Properties

A **Database Transaction Trigger** fires when changes are detected in specified database tables. In the **Database Trigger Properties** tab, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the database trigger.
- **Description:** Enter a description for the database trigger (optional).
- **Enable on Tag:** Checking this check box links the activation of the database trigger to a specified data tag value. Enter the tag name in the **Enable Tag** field.
- **Enable Tag:** Specify a tag on which to enable the database trigger. Clicking the ... button allows you to select a tag from the Unified Data Browser. The trigger will be disabled if **Enable Tag** has a value of 0, FALSE, or BadQuality.
- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new database trigger item to be configured.

Database Trigger Properties

Database Trigger Options

The **Database Trigger Options** tab, shown in the figure below, enables you to connect to a database and define a SQL database query to execute, as described below.

- **Polling Rate:** Specifies how often (in seconds) the system will check for updates occurring in the connected database.
- **Query Timeout:** Specifies the amount of time (in seconds) the system will wait for a response to a query from the database.

Database Trigger Options

Database Trigger Properties Database Trigger Options

Database Connection Info: 

SQL Query to execute:

Polling Rate (sec): 120 Query Timeout (sec.): 60

Fire trigger when result of SQL Query has more than 10 records

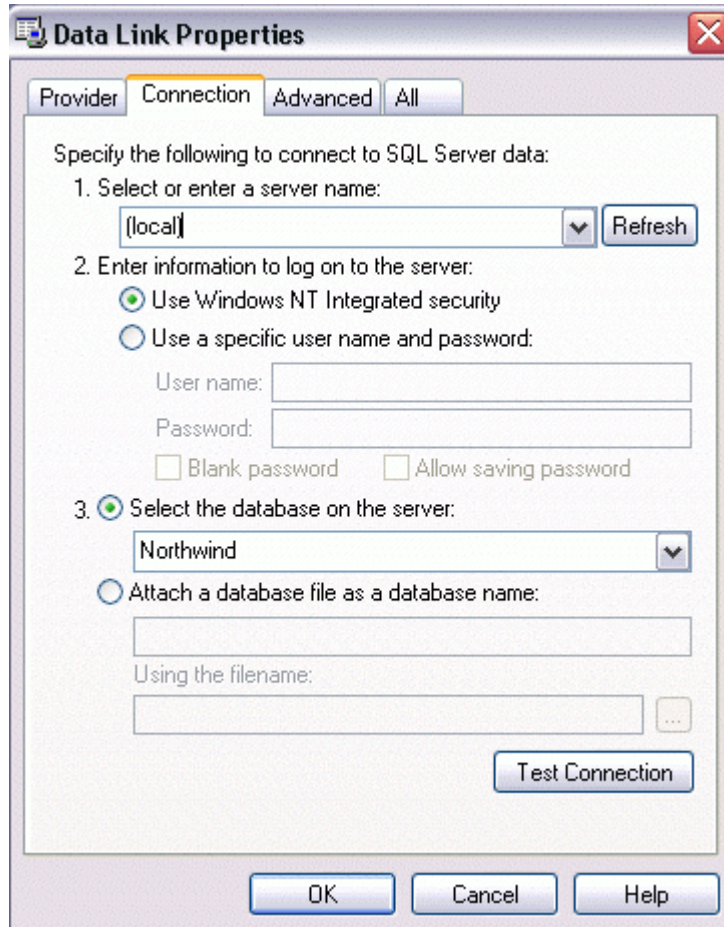
☒ Fire On True
☐ Fire While True Interval (sec.): 10

Apply Reset Add New

Database Connection

Under **Database Connection Info**, click the button to the right. Connect to a specific database through the Windows **Data Link Properties**, as shown in the figure below.

Data Link Properties



SQL Query To Execute

Once you have connected to the database, you must create a SQL query to specify which database tables will be used for the trigger. You can type your SQL query directly into the **SQL Query to Execute** box.

Note. Please refer to the SQL language documentation for details about SQL expressions.

Trigger Conditions

When you have finished creating a SQL query, specify when the trigger will fire: fire on true, fire while true, when the SQL query returns one or more matching records, or when the query exactly matches a specified number of records, etc..

[Contents](#)

[Date/Time Triggers](#)

[Time Trigger Item Properties](#)

[Periodic Triggers](#)

[Periodic Trigger Item Properties](#)

[Data Triggers](#)

[Data Trigger Item Properties](#)

[Database Trigger Item Properties](#)

[Alarm Triggers](#)

[Alarm Trigger Item Properties](#)

[File Triggers](#)

[File Trigger Item Properties](#)

[NT Event Triggers](#)

[NT Event Trigger Item Properties](#)

[Database Triggers](#)

[Database Trigger Item Properties](#)

Alarms

Alarm Data Management

AlarmWorX32 ActiveX components need a data source to be specified, which is called a subscription; and to which filters or rules for excluding events are applied. Both of these aspects of AlarmWorX32 can be set within the AlarmWorX32 ActiveX properties; however, when an option is set in the AlarmWorX32 ActiveX the Unified Data Manager can be the repository and source of this information.

There are certain advantages in using the UDM in place of a direct subscription. The Unified Data Manager centralizes the information relating to AlarmWorX32 subscriptions and filters, making AlarmWorX32 containing applications more portable, with replication of alarming stations less susceptible to data connection errors. Additionally, a centralized data repository is more easily backed up and made fault tolerant.

As with other distributed ICONICS GENESIS32 servers, AlarmWorX32 applications communicate through GenBroker to the server running UDM.

[Alarm Data Management](#)Alarm_Data_Management

[Alarm Subscriptions](#)Alarm_Subscriptions

[Alarm Subscription Item Properties](#)Alarm_Subscription_Item_Properties

[Alarm Filters](#)Alarm_Filters

[Alarm Filter Item Properties](#)Alarm_Filter_Item_Properties

Alarm Subscriptions

An **alarm subscription** defines a connection to an alarm server. The **Alarm Subscriptions** tree control in the Unified Data Manager enables you to set up subscriptions to OPC Alarm and Event servers. Within the UDM you can manage the following aspects of alarm subscriptions:

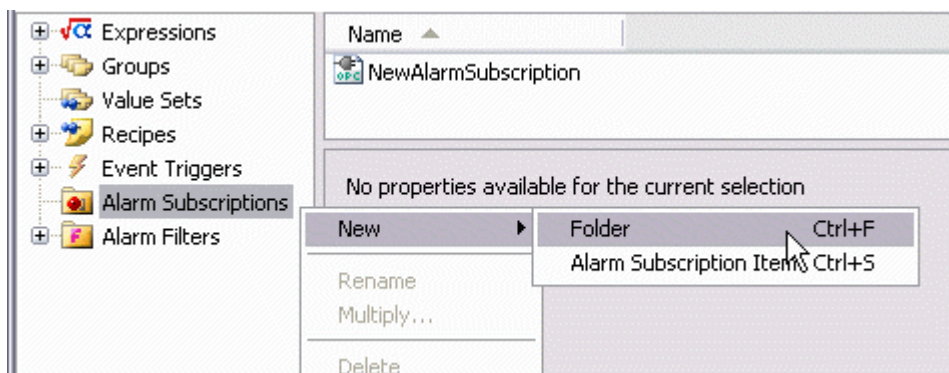
- Create and edit alarm subscriptions.
- Create folders for alarm subscriptions.
- Provides global management of alarm subscriptions.
- Choose between local or global alarm subscriptions.

Creating a New Alarm Subscription Folder

Alarm subscriptions are organized in a tree structure of folders and alarm subscription tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new alarm subscription folder:

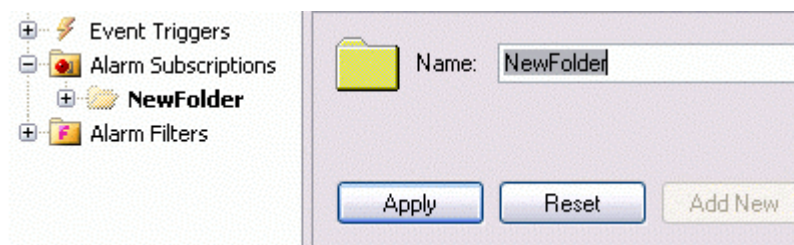
1. Right-click on the **Alarm Subscriptions** tree control of the Configurator and select **New, Folder** from the context menu, as shown in the figure below.

Creating a New Alarm Subscription Folder



- The properties dialog for the new alarm subscription folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Alarm Subscription Folder



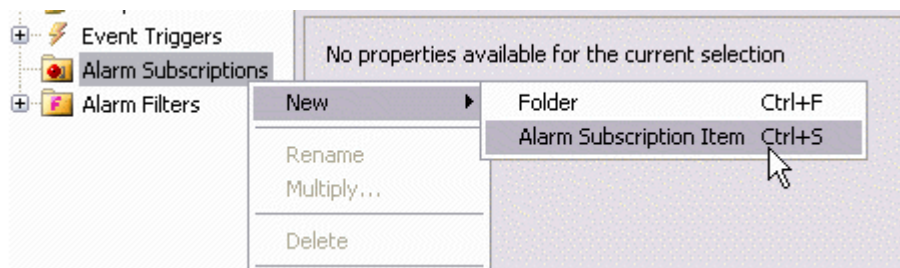
- In the **Name** field, type a name for the new folder.
- When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Alarm Subscriptions** tree control.

Creating a New Alarm Subscription Item

To create a new alarm subscription item:

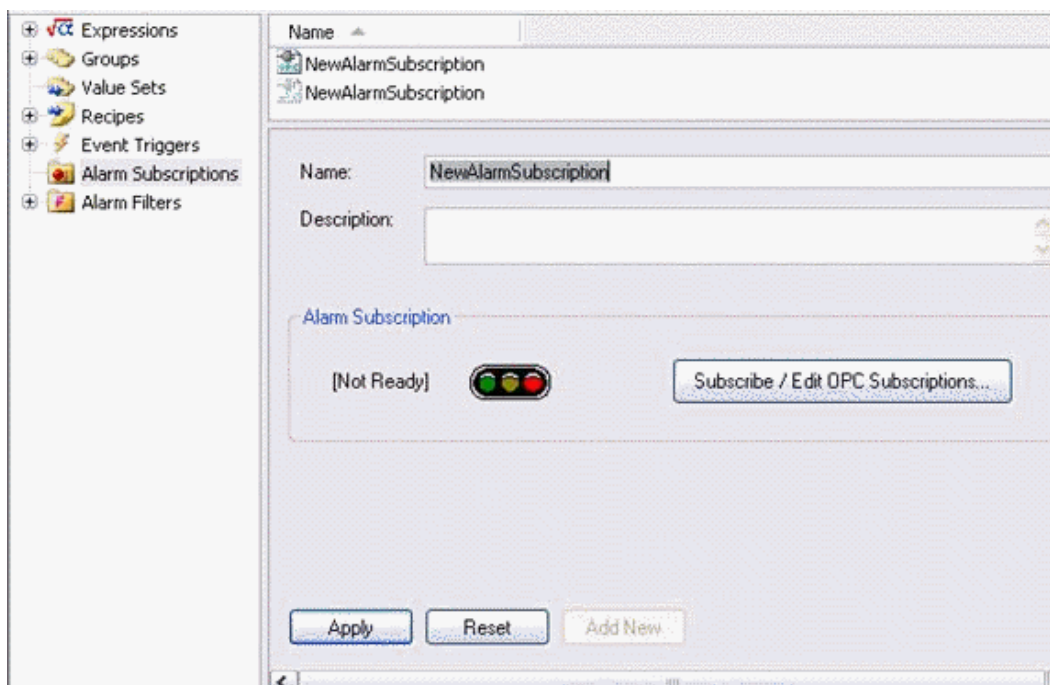
- Right-click on the **Alarm Subscriptions** tree control of the Configurator and select **New > Alarm Subscription Item** from the pop-up menu, as shown in the figure below.

Creating a New Alarm Subscription Item



- The properties dialog for the new alarm subscription item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Alarm Subscription Item



3. In the **Name** field, type a name for the new alarm subscription.
4. In the **Description** field tab, you can type an optional description for the new alarm subscription.
5. When you have finished configuring alarm subscription properties, click the **Apply** button. The new alarm subscription item appears under the **Alarm Subscriptions** tree control.

[Contents](#)

[Alarm Data Management](#)Alarm_Data_Management

[Alarm Subscriptions](#)Alarm_Subscriptions

[Alarm Subscription Item Properties](#)Alarm_Subscription_Item_Properties

[Alarm Filters](#)Alarm_Filters

[Alarm Filter Item Properties](#)Alarm_Filter_Item_Properties

Alarm Subscription Item Properties

In the **Alarm Subscription Properties**, shown in the figure below, configure the following settings:

- **Name:** Enter a name for the alarm subscription.
- **Description:** Enter a description for the alarm subscription (optional).
- **Alarm Subscription:** By default the traffic light icon is red. After you set up a subscription to an alarm server, the traffic light icon turns green to indicate that it is ready for use. Clicking the **Subscribe / Edit OPC Subscriptions** button in the alarm subscriptions field opens the **Subscription Properties** dialog box, which is described in the sections below.

Note: You must use either all global subscriptions or all local subscriptions; global and local subscriptions cannot be mixed.

- **Apply:** Saves all changes to the configuration database.
- **Reset:** Clears all recently added information.
- **Add New:** Creates a new alarm subscription item to be configured.

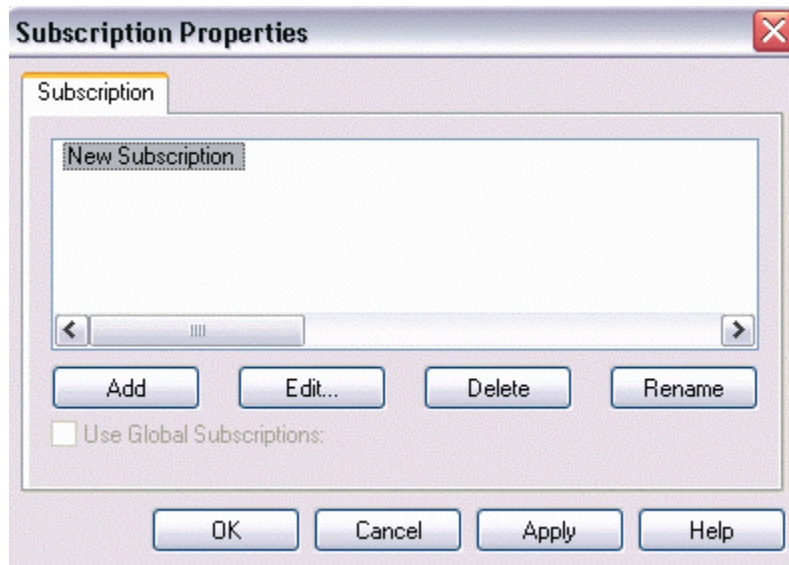
Alarm Subscription Properties

The screenshot shows the 'Alarm Subscription Properties' dialog box. On the left is a tree view with the following items: Expressions, Groups, Value Sets, Recipes, Event Triggers, Alarm Subscriptions (selected), and Alarm Filters. The main area on the right is titled 'Name' and contains a list with two entries: 'NewAlarmSubscription' and 'NewAlarmSubscription'. Below this is a 'Name' text box containing 'NewAlarmSubscription' and a 'Description' text box. Under the 'Alarm Subscription' section, there is a '[Not Ready]' status label, a traffic light icon (green, yellow, red), and a button labeled 'Subscribe / Edit OPC Subscriptions...'. At the bottom of the dialog are three buttons: 'Apply', 'Reset', and 'Add New'.

Subscription Properties

Clicking the Subscribe/Edit OPC Subscriptions button in the alarm subscriptions field opens the Subscription Properties dialog box, shown in the figure below. The Subscription tab determines what type of OPC connection will be made. It allows you to add, rename, delete, or edit a subscription to a particular OPC Alarm and Event Server.

Subscription Properties Dialog Box



To add a new subscription:

Click the **Add** button.

The subscription named "New Subscription" appears, as shown in the figure below. New subscription do not contain any data, and therefore must be set to an alarm event source.

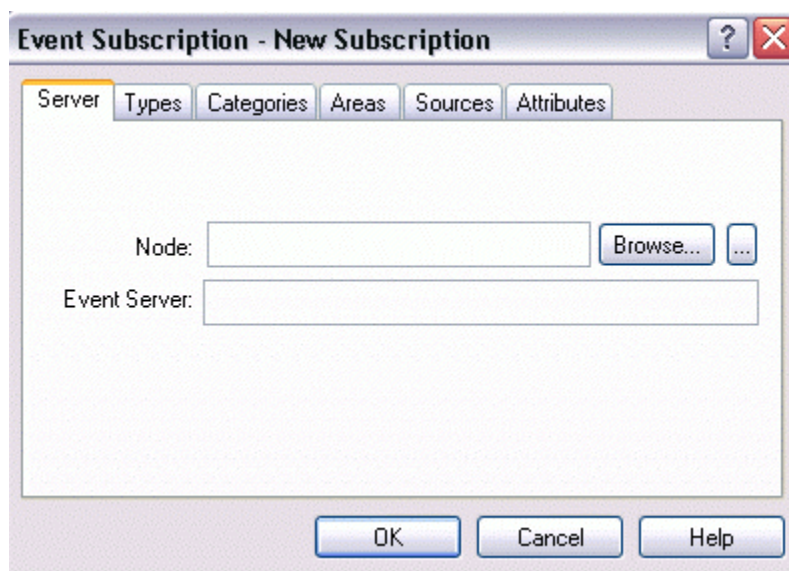
To set the alarm subscription data source:

Click the **Edit** button to open the **Event Subscription** dialog box, as shown below.

It is only possible to add or edit subscriptions that are connected to active OPC Alarm and Event servers.

Note. It is possible for a server to have more than one subscription. In fact, it is a very effective way to achieve filtering.

Event Subscription Dialog Box (Local Subscription)



You have the option of creating a global alarm subscription or a local alarm subscription.

To create a global subscription

1. Remove all existing local subscriptions
2. Check the **Use Global Subscriptions** check box.

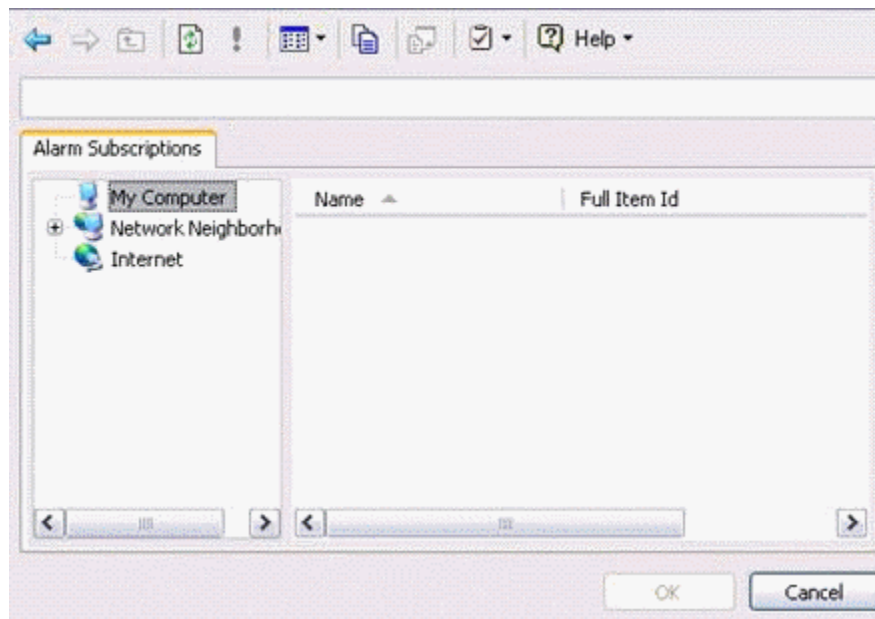
The Unified Data Browser dialog box opens, as shown in the figure below.

Note. You must use either all global subscriptions or all local subscriptions; global and local subscriptions cannot be mixed.

3. Click the **Alarm Subscriptions** tab,

All global filters are configured in the Unified Data Manager. Global subscriptions are prefixed by "awxs".

Unified Data Browser (Global Subscription)



If you select a local subscription, the **Event Subscription** dialog box opens, as shown in the figure below. It is only possible to add or edit subscriptions that are connected to active OPC Alarm and Event servers.

Server Tab

The **Server** tab of the **Event Subscription** dialog box, shown in the figure below, allows you to select an **Alarm and Event Server** and **Node** for each subscription.

To select the event server:

1. Click the **Browse** button.

The Event Subscription dialog box Server tab

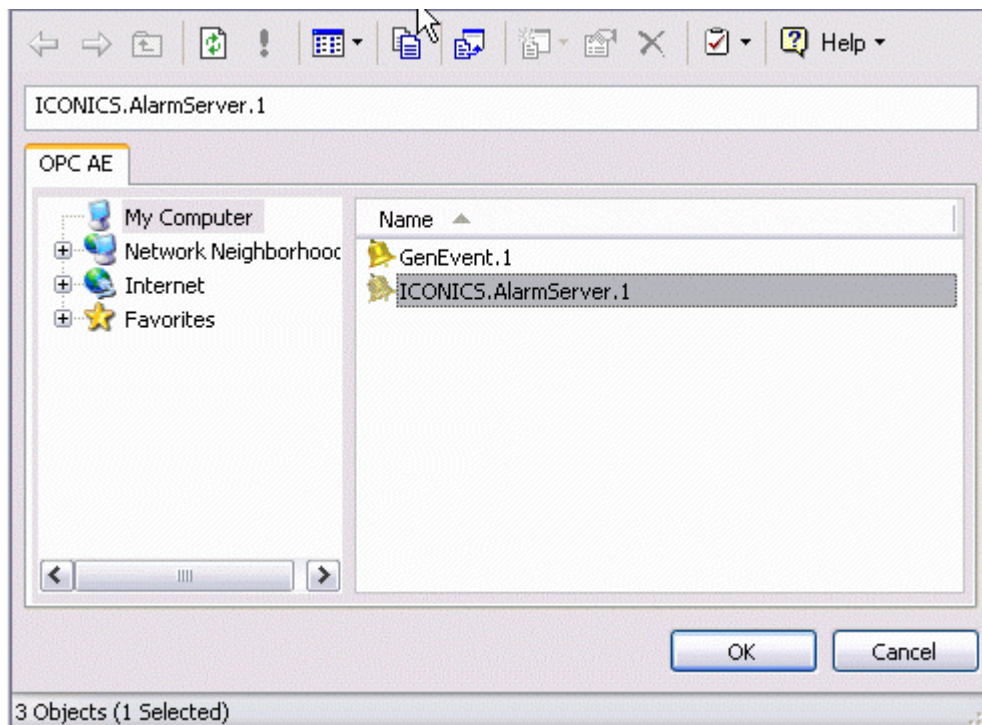


This opens the **OPC AE** tab of **Unified Browser**, which lists all available Alarm and Event OPC servers.

2. Select the desired server, and click **OK**.

For local servers, it is not necessary to fill in the **Node** field.

Selecting an Alarm and Events Server From the Unified Data Browser



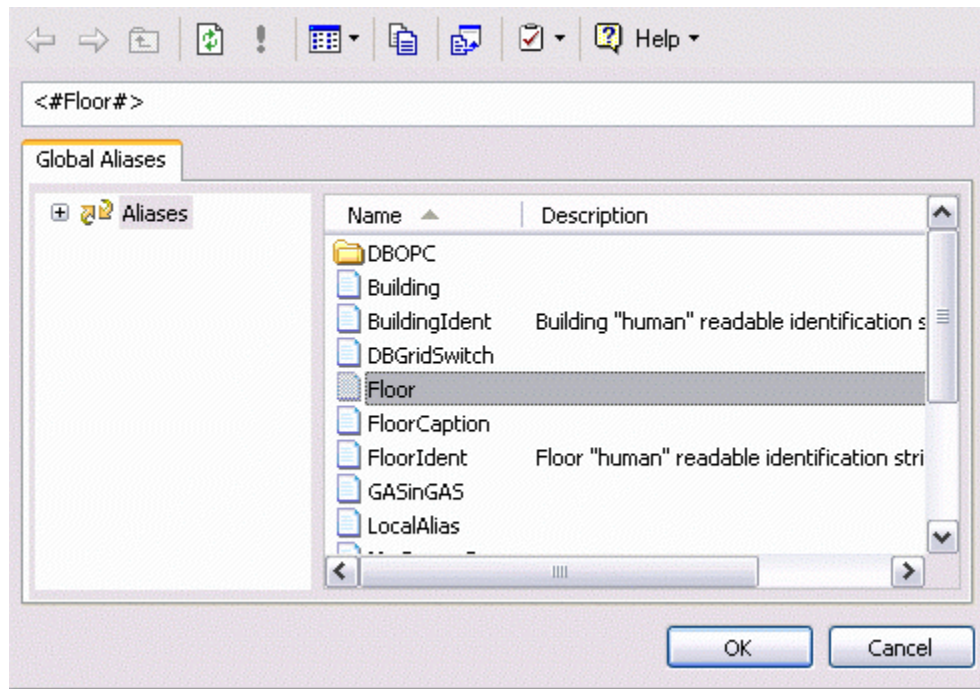
You can also select global aliases to use in the **Node** field:

Click the ... button (Ellipse) and selecting **Global Alias Browser** from the pop-up menu.

In the Global Alias Browser, as shown in the figure below. Select a global alias from

the Unified Browser, which includes all global aliases in the global alias database. This eliminates the need to manually type in the alias name. All global aliases that are configured in the Global Alias Engine Configurator are conveniently available to choose from inside the browser. The tree control of the Global Alias Engine Configurator is mimicked in the tree control of the Global Alias Browser. Select a global alias by double-clicking the alias name. The alias name appears at the top of the browser, which automatically adds the <# and #> delimiters to the alias name. Click the **OK** button.

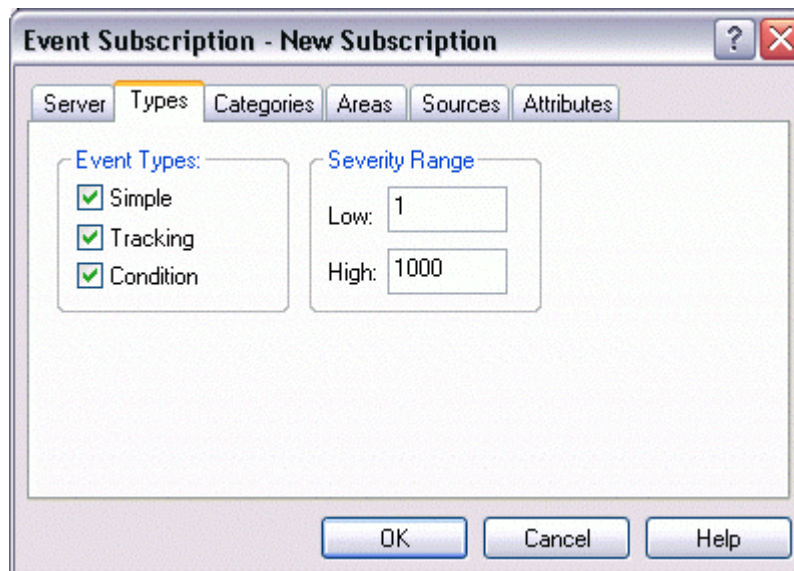
Selecting an Alias From the Global Alias Browser



Types Tab

The **Types** tab of the **Event Subscription** dialog box, shown in the figure below, allows you to configure which OPC-defined event types each subscription should have, as well as to set the ranges for severity (priority). A value of "0" represents the low severity value, and "1000" represents the high severity value. Please note that OPC Alarm and Event (AE) servers are required to scale severity values to the OPC ranges (i.e. an AE server that contained two severity ranges would convert these to "0" and "1000").

Event Subscription Dialog Box: Types Tab



Simple (only produced by the GenEvent Server): These messages state information but do not have alarm status, nor do they contain information on what initiated the message. This includes the following information: Source, Time, Type, EventCategory, Severity, Message, Cookie, and server-specific items.

Example: "FIC101, 12:0:0 1/1/99, Simple, Category1, 100, 'Shift Change', 1"

Simple messages would be similar to an event.

Tracking (only produced by the GenEvent Server): These messages contain the additional information about the client that initiated the event. This includes the following information: Source, Time, Type, EventCategory, Severity, Message, Cookie, ActorID, and server-specific items.

Example: "FIC101, 12:0:1 1/1/99, Tracking, Category1, 300, 'Pump pressure Set to 10 psi', 1, Station 12"

Tracking messages are similar to event messages in that the cause of the event is important. An example would be an operator changing a setpoint value. This type of message does not include acknowledge capability. When a value is changed in GraphWorX, a "Tracking Event" is issued with the category "Operator Process Change." All other GENESIS32 apps report only "Simple" events which are always category "System." GenEvent Automation users are free to specify the other categories when they issue a "Tracking Event."

Note: Simple and tracking messages are removed from the alarm viewer via the acknowledge mechanism.

Condition (only produced by the AlarmWorX Server): These messages contain all of the above information but also include an acknowledgement portion. This includes the following information: Source, Time, Type, EventCategory, Severity, Message, Cookie, ConditionName, SubConditionName, ChangeMask, NewState, ConditionQuality, AckRequired, ActiveTime, ActorID and server-specific items.

Example: "FIC101, 12:0:3 1/1/99, Condition, Category1, 700, 'Pump pressure to high', 1, Limit, HiHi, 1, Active Enabled, Good, TRUE, 12:0:2 1/1/99"

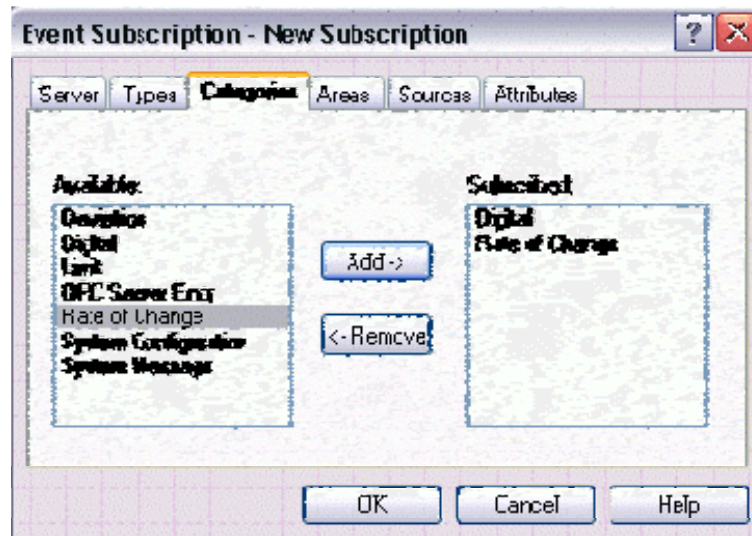
Condition messages would be considered a "typical" alarm message with acknowledge capability.

For more information, please refer to the OPC Alarm and Events specification at www.opcfoundation.org.

Categories Tab

The **Categories** tab of the **Event Subscription** dialog box, shown in the figure below, allows you to select the categories for a subscription. Select the category from the list of available categories, and then click the **Add ->** button. The category will appear in the **Subscribed** list. To remove a category from this list, select it in the **Subscribed** list and click the **<- Remove** button. If no categories are listed in the **Subscribed** list, then all categories are selected by default.

Event Subscription Dialog Box: Categories Tab



Alarm Server Categories

All events generated are of the OPC-defined Event Type **Condition**. The **AlarmWorX32 Server** defines the following **Event Categories** and uses the identical names for the **Condition Names**:

- **Deviation:** Triggers an alarm if the difference between two input values exceeds the high or low limits specified in the Alarm Server configuration.
- **Digital:** Triggers an alarm if the comparison between the **Alarm State Value** (specified in the Alarm Server configuration) and the input state is TRUE.
- **Limit:** Triggers an alarm if the input value exceeds the high or low limits specified in the Alarm Server configuration.
- **Rate of Change:** Triggers an alarm if an input value changes at a rate greater than or equal to the limit specified in the Alarm Server configuration.
The **Limit** and **Deviation** conditions have the following subconditions:
 - **HiHi:** Triggers an alarm if the value is greater than or equal to the **HiHi** limit specified in the Alarm Server configuration.
 - **Hi:** Triggers an alarm if the value is greater than or equal to the **Hi** limit specified in the Alarm Server configuration.

- **Lo:** Triggers an alarm if the value is less than or equal to the **Lo** limit specified in the Alarm Server configuration.
- **LoLo:** Triggers an alarm if the value is less than or equal to the **LoLo** limit specified in the Alarm Server configuration.

Note. The following categories are not used in the AlarmWorX32 Server, OPC Server Error, System Configuration, and System Message.

Event Server Categories

The **GenEvent Server** defines the following **Event Categories**:

- **Operator Process Change:** Sent by GenEvent when a value is changed in GraphWorX32.
- **Sysconfig:** Sent by GenEvent when a configuration change is made to a file or database.
- **System:** All other GenEvent messages.

Note: The **Advanced** category is not used in the GenEvent Server: For more information, please refer to the OPC Alarm and Events specification at www.opcfoundation.org.

Areas Tab

Use the **Areas** tab of the **Event Subscription** dialog box, shown in the figure below, to select an area or a group of areas for filtering in a subscription. An **area** is used to group OPC alarm tags. This information can be used by clients for filtering purposes. A tag can exist under multiple areas, and an area can have a multiple levels. An area is defined by its name and the name of its parent branches. For example, a branch called Area 1 under plant Area A is different from Area 1 under plant Area B. Areas can be configured in the AlarmWorX32 Server Configurator.

Event Subscription Dialog Box: Areas Tab



Clicking the **Browse** button opens the Unified Data Browser, which lists all available areas for your event server. Area subscription supports wildcards, which subscribe to the format of the Microsoft Visual Basic "like" command. For example, "Area1*" will subscribe to all alarm areas that contain strings beginning with "Area1". A detailed explanation of the wildcard support can be found in the OPC Alarm and

Events documentation. It is recommended that you thoroughly read the wildcard documentation before attempting to use complicated expressions.

For the "like" operator: "string" equals the string to search in; "pattern" equals the string to search for (can include wildcards); nonzero for case-sensitive search; zero for case-insensitive search. String syntax is "string".

You can use these special symbols in pattern matches to match a single character in the source string:

- ? Accepts any single character.
- # Accept a single character if it is digit (0-9).
- [charlist] Accepts a single character if it is part of the characters list.
- [!charlist] Accept a single character if it is not part of the characters list.

Note: To match the special characters left bracket ([), question mark (?), number sign (#), and asterisk (*), enclose them in brackets. The right bracket (]) cannot be used within a group to match itself, but it can be used outside a group as an individual character.

By using a hyphen (-) to separate the upper and lower bounds of the range, *charlist* can specify a range of characters. For example, [A-Z] results in a match if the corresponding character position in *string* contains any uppercase letters in the range A-Z. Multiple ranges are included within the brackets without delimiters.

Other important rules for pattern matching include the following:

- An exclamation point (!) at the beginning of charlist means that a match is made if any character except the characters in charlist is found in string. When used outside brackets, the exclamation point matches itself.
- A hyphen (-) can appear either at the beginning (after an exclamation point if one is used) or at the end of charlist to match itself. In any other location, the hyphen is used to identify a range of characters.
- When a range of characters is specified, they must appear in ascending sort order (from lowest to highest). [A-Z] is a valid pattern, but [Z-A] is not.

The character sequence [] is considered a zero-length string ("").

You can also use the * (asterisk) to match zero or more characters in the string.

It is important to note that the "like" function performs a character-by-character comparison of the source and the compare strings. If these strings have different length, then the comparison will not be possible and the function will return FALSE. The only exception to the aforementioned rule is through the use of the * (asterisk), which can take the place of zero or more characters.

For more information about wildcards in strings, please refer to the Expression Editor help documentation.

It is also possible to delete an area from the **Areas** tab. To delete an area, select it from the list of areas for this particular subscription, and then click the **Delete** button. Not all OPC Alarm and Event servers support area filtering as part of the subscription.

Note: If no areas are listed, then all areas are selected by default. It is recommended that you have an area in the alarm server to which you subscribe; this ensures that the relevant alarms are received. Any available areas listed in the active Alarm Server configuration database are available to choose from in the Area/Source Browser.

Sources Tab

The **Sources** tab of the **Event Subscription** dialog box, shown in the figure below, allows you to filter on a source or group of sources for a particular subscription. A **source** is an OPC alarm tag in an alarm configuration. In the AlarmWorX32 Server Configurator, a source can be associated with a particular area (group of alarm tags). It is also possible to delete a source for a particular subscription. To delete a source, select it from the list of sources for this particular subscription and click the **Delete** button. Not all OPC Alarm and Event servers support source filtering as part of the subscription.

Note: If no sources are listed, then all sources are selected by default. Any available sources listed in the active Alarm Server configuration database are available to choose from in the Area/Source Browser.

Event Subscription Dialog Box: Sources Tab



To select a source, click the **Browse** button and select one from the Unified Data Browser. Source subscription provides the wildcard support found in the area subscription.

Attributes Tab

The **Attributes** tab of the **Event Subscription** dialog box, shown in the figure below, allows you to add extra attributes to a particular event category within a subscription. Select the event category from the corresponding drop-down list. Choose the desired items from the available attributes list, and click the **Add** button. To remove an attribute from the subscribed list, select that particular attribute and click **Remove**.

Note: The following categories are not used in the AlarmWorX32 Server: OPC Server Error, System Configuration, and System

Message.

Event Subscription Dialog Box: Attributes Tab



It is important to note that the order of the subscribed attributes does matter. The order of the attributes determines the order they will be selected from the alarm server, and also determines with which viewer attribute column they are associated. To change the order of the attributes in the subscribed field, simply select an attribute and click the "up" and "down" arrow buttons. Server-specific information will be displayed in the Attributes1-n columns. The attributes columns are added in the **Column** tab of the **Alarm Viewer ActiveX Properties** dialog box.

Note: To receive extra attributes, you must request them per event category

Event Attributes

The following event attributes are made available to subscribing clients:

Attribute	Deviation	Digital	Limit	Change Rate	Type	Comment
ACK COMMENT	Yes	Yes	Yes	Yes	VT_BSTR	Comment entered when alarm was last acknowledged.
ALARM COUNT	Yes	Yes	Yes	Yes	VT_I4	Number of alarm transitions before acknowledge.
AREA	Yes	Yes	Yes	Yes	VT_ARRAY VT_BSTR	Array of areas
CV	Yes	Yes	Yes	Yes	VT_R8 VT_BOOL	Current Value (OPC Input 1 or 2).
DEADBAND	Yes		Yes	Yes	VT_R8	Alarm detection Deadband.
DEFAULT DISPLAY	Yes	Yes	Yes	Yes	VT_BSTR	A text string, usually a file name, that when launched provides related information.
HELP TEXT	Yes	Yes	Yes	Yes	VT_BSTR	Help information
LIMIT VALUE EXCEEDED	Yes		Yes	Yes	VT_R8	The Current Value at the time the limit was exceeded.
LOOP DESC	Yes	Yes	Yes	Yes	VT_BSTR	A description of the Source (tag).
NEXT_LIM	Yes		Yes		VT_R8	The value of the next limit.
NORMAL STATE		Yes			VT_BOOL	Value of the normal state (TRUE or FALSE).
PREV LIM	Yes		Yes		VT_R8	Value of the previous limit reached.
RELATED VALUE 01-10	Yes	Yes	Yes	Yes		Associates up to 10 OPC tags or expressions with each alarm tag as "supplemental" information to the alarm.
SP	Yes				VT_SP	Setpoint (OPC Input 2)

[Contents](#)

[Alarm Data Management](#)

[Alarm Subscriptions](#)

[Alarm Subscription Item Properties](#)

[Alarm Filters](#)

[Alarm Filter Item Properties](#)

Alarm Filters

Alarm filters allow you to filter an alarm subset. The **Alarm Filters** tree control in the Unified Data Manager enables you to set up alarm filters for subscribed OPC Alarm and Event servers. You can make filters that only filter a specific alarm tag or filters that filter a group of alarms. Features of alarm filters include:

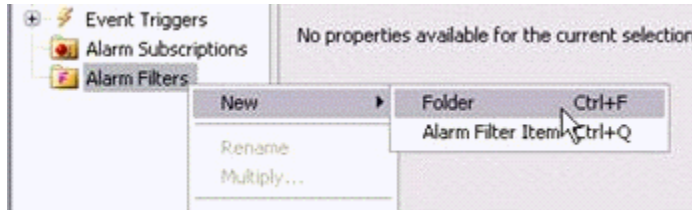
- Create and edit alarm filters.
- Create folders for alarm filters.
- Provides global management of alarm filters.
- Choose between local or global alarm filters.

Creating a New Alarm Filter Folder

Alarm filters are organized in a tree structure of folders and alarm trigger tags (items). Folders allow organization of data tags into a hierarchical tree structure. To create a new alarm filter folder:

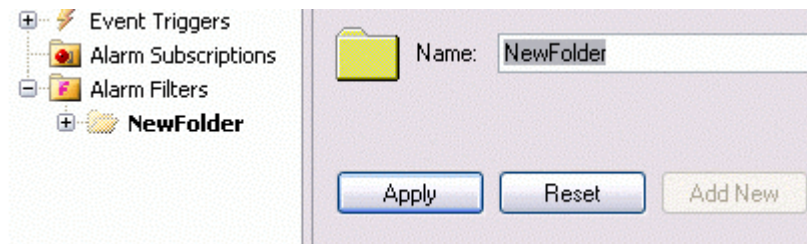
1. Right-click on the **Alarm Filters** tree control of the Configurator and select **New > Folder** from the pop-up menu, as shown in the figure below.

Creating a New Alarm Filter Folder



2. The properties dialog for the new alarm filter folder appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Alarm Filter Folder



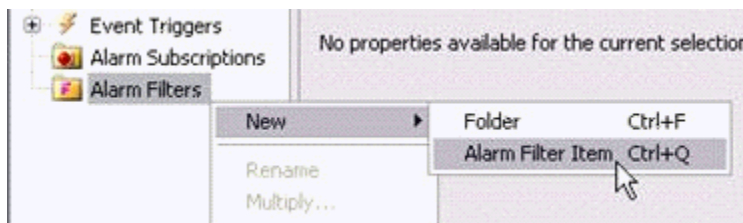
3. In the **Name** field, type a name for the new folder.
4. When you have finished configuring the folder properties, click the **Apply** button. The new folder appears under the **Alarm Filters** tree control.

Creating a New Alarm Filter Item

To create a new alarm filter item:

1. Right-click on the **Alarm Filters** tree control of the Configurator and select **New > Alarm Filter Item** from the pop-up menu, as shown in the figure below.

Creating a New Alarm Filter Item



2. The properties dialog for the new alarm filter item appears in the right-hand pane of the Configurator, as shown in the figure below.

Setting the Properties for the New Alarm Filter Item

3. In the **Name** field, type a name for the new alarm filter.
4. In the **Description** field tab, you can type an optional description for the new alarm filter.
5. When you have finished configuring alarm filter properties, click the **Apply** button. The new alarm filter item appears under the **Alarm Filters** tree control.

[Contents](#)

[Alarm Data Management](#)

[Alarm Subscriptions](#)

[Alarm Subscription Item Properties](#)

[Alarm Filters](#)

[Alarm Filter Item Properties](#)

Alarm Filter Item Properties

Expression	Result
<code>x={{Severity}} > 500.</code>	Only alarm messages with a severity greater than 500 will be visible.
<code>x=like({{Source}}, "Tag",0)</code>	Only messages with the tag in the source name will be displayed.
<code>x=like({{Message}}, "Boiler Pump not*",0)</code>	Only messages with a description beginning with "Boiler Pump not" will be displayed.
<code>x=like({{Node}}, "Alpha",0)</code>	Only messages from Node Alpha will be displayed.
<code>x=like({{Attribute 1}}, "Plant Area 1",0)</code> <code>x={{Attribute 2}} == 40.</code>	Tag values Attribute 1 through Attribute 20 are server specific. They can be strings, numeric values, or arrays. The most common array usage is for Areas. When dealing with areas, use the like function.
<code>x=1.</code>	Filter displays all messages.
<code>x=0.</code>	Filter does not display any messages.

Schedules

Schedules

Data that you create in ScheduleWorX32 is stored in a database and displayed in ScheduleWorX32. That same data is also displayed in the Unified Data Manager, which is one of the ICONICS Tools. In the UDM you can:

- See which schedules are defined
- See which schedules are currently running and their effective periods.
- You can create new schedules
- Disable all schedule(s)
- Duplicate a schedule
- Rename schedules.

However, you can't set the properties for an event that is part of a schedule within the UDM. Therefore, the UDM is really only useful to determine the condition of your schedules and you should use ScheduleWorX32 for all configuration.

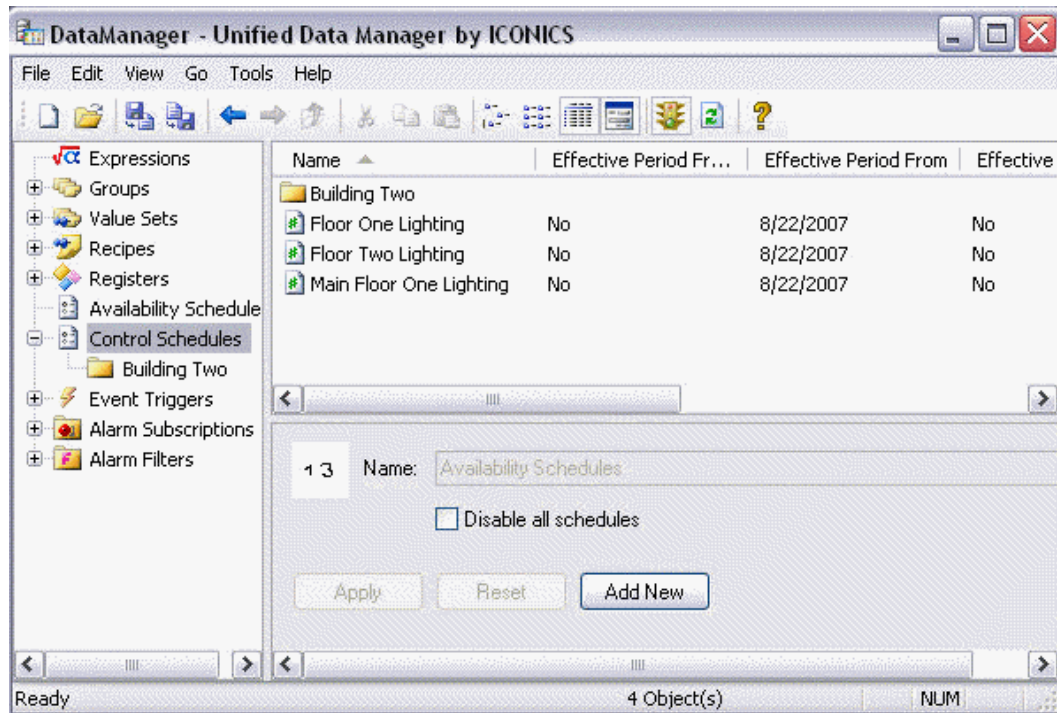
Control Schedules are schedules are those with events that are assigned a value of a valueset and control a resource. Availability Schedules are schedules defined for a particular resource to allow access to that resource when time permits and by order of priority. The example below for Control Schedules shows a set of floor lighting schedules. An Availability Schedule would show the days and times a conference room was booked or free. Availability Schedules are not implemented in ScheduleWorX32 version 9.10.

To view schedules in the Unified Data Manager:

Click on the **Start** menu, All Programs, **ICONICS Tools**, and then select the **Unified Data Manager** command.

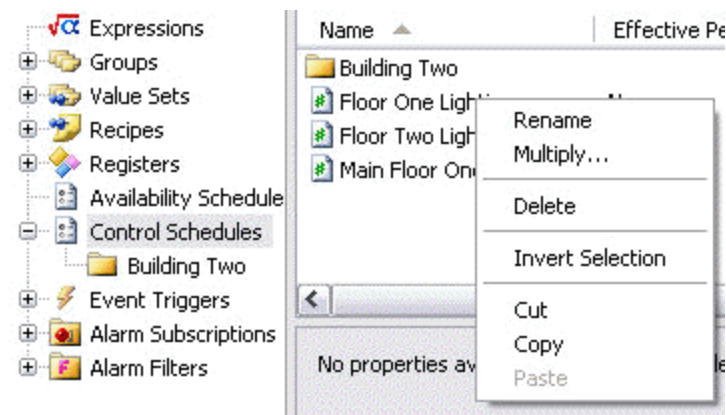
The UDM appears as shown below.

Schedules and events in the Unified Data Manager.

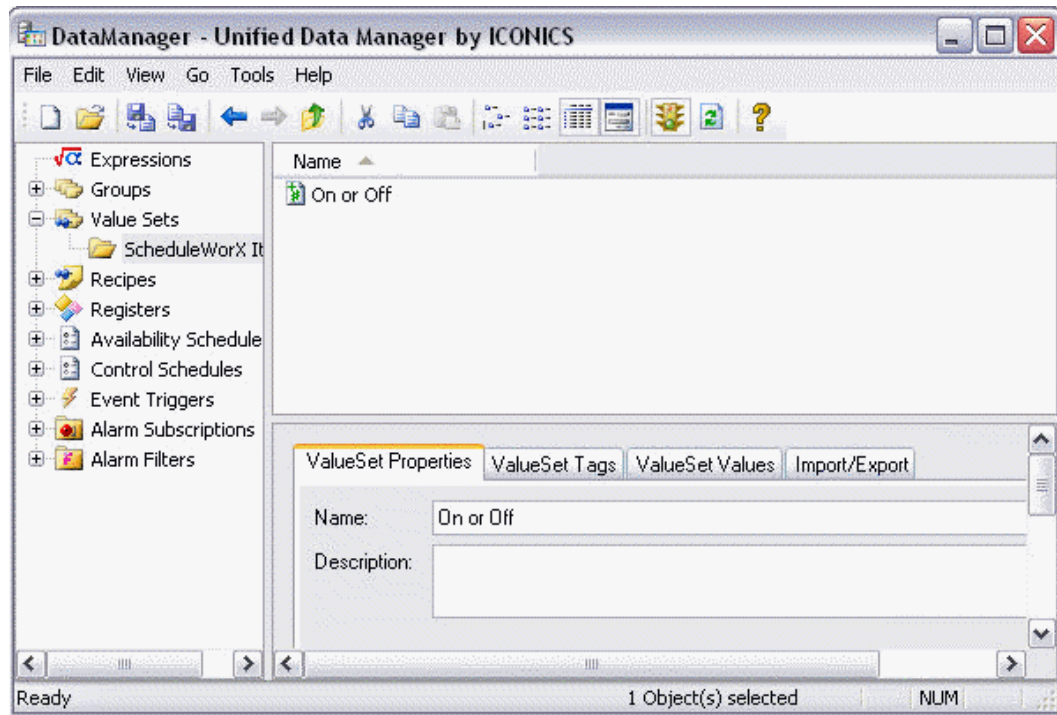


You can view the context menu for a schedule by right clicking on it in the Detail pane, as shown in the figure below.

A schedule context menu in the UDM.

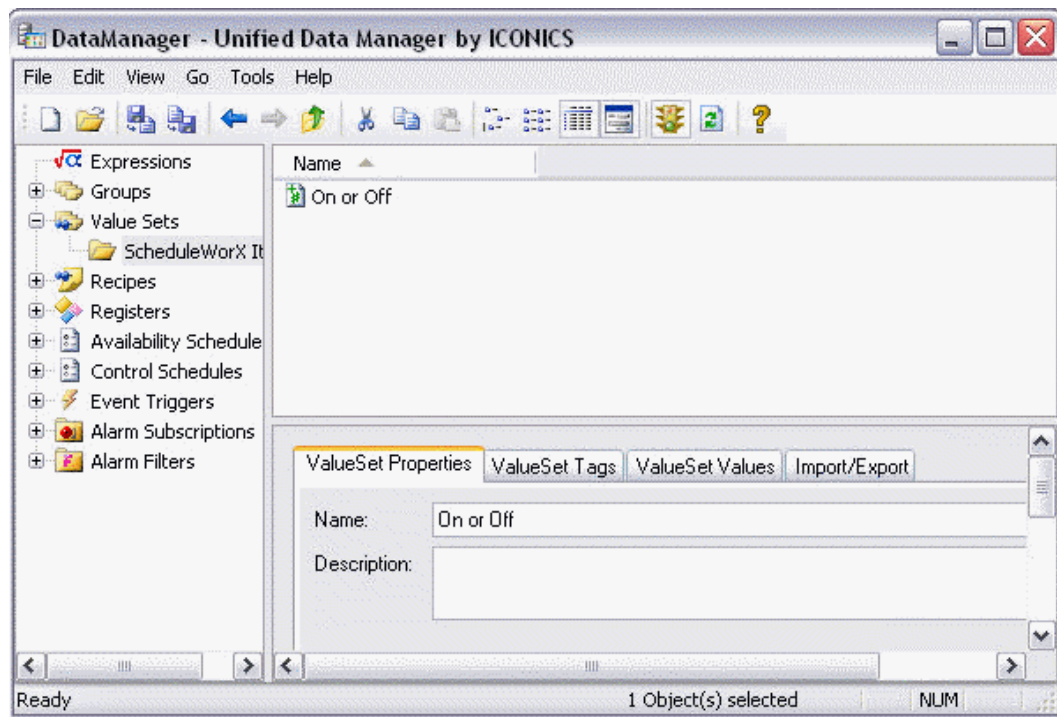


Schedules are stored in the UDM to support ICONICS ScheduleWorX32. In ScheduleWorX32 you create and modify schedules, and the scheduling portion of the UDM.DLL runtime service serves as the event engine for your schedules. The runtime module for ScheduleWorX32 is the Unified Data Manager's runtime, UDMRuntime.EXE.



ValueSets must be defined in the ValueSet section of ScheduleWorX32 in order to be assigned to a schedule. The definition of a valueset can be established in ScheduleWorX along with the associated values and data types, and the valueset data is stored in the ScheduleWorX32 database. ValueSets stored in the ScheduleWorX32 database are replicated to the database of the Unified Data Manager. You can open and view ValueSets for ScheduleWorX32 in the ValueSet node of the UDM, as shown below. The Unified Data Browser is another application that can be used to assign valuesets, and is used on the ValueSet Values tab of the ScheduleWorX32 ValueSet properties.

You can alter valuesets for schedules in the UDM.



[Contents](#)