



Summarizing Data

In many applications, reports are required to show summarized calculations such as averages and maximums. In cases where the raw data is being logged to a historian, retrieving summaries is a straight-forward task. However, when there is only a real time server, this can be a problem.

XLReporter can be configured to monitor the real time values of the process, calculate analytics (summaries) and then store the results either to its internal database or to a database available to the system. These values can then be used for reporting purposes.

There are 6 types of analytics available: Snapshot, Multi Snapshot, Profile, State Profile, Difference and Statistic.

Snapshot

Snapshot analytics provide current values in the process.

They can capture current values and store them in a database for use in one or more reports.

As an example, suppose a regulatory report is required showing 15 minute values from the process. While that can be accomplished updating real time values in a report every 15 minutes, by setting up snapshot analytics, these values are stored to a database so if the report needs to be recreated all the data is readily available.

Multi Snapshot

Multi Snapshot analytics provide information about when particular events in the system occur.

They can capture the timestamp and process values when an event begins and ends as a single record that can be logged to a database.

This information is ideal for extracting data from a continuous historian based on the duration of an event.

As an example, in a batch system the multi snapshot analytic can capture when the batch started, what the name of the batch was and when the batch completed. Now, an interactive report can be configured where the user can specify a batch by name and extract the information recorded in the historian specifically while the batch was running.

Profile

Profile analytics provide information about the state changes of digital values.

They can calculate such things as the total number of ON/OFF states and the time period that each state was in effect.

This information is ideal for equipment utilization and downtime reports.

State Profile

State Profile analytics provide information about the state changes of analog values. Up to 4 unique states are provided by specifying a data range by a low and high value.

They can calculate such things as how long and how often the process was in each unique state.

This information is ideal to measure the behavior of a process.

Difference

Difference analytics provide metrics about analog values in the process which represent totalizers.

They calculate the mathematical difference between the previously collected value and the current value and scale the result, if desired.

As an example, suppose the process has a totalizer that represents the total gallons pumped and you need to know how much was pumped over the day. A difference analytic can be configured return the difference of yesterday's value and today's value.

Statistic

Statistic analytics are provided to store metrics about analog values in the process.

Calculations such as minimum, maximum, average, total, variance, standard deviation and more are available.

This information is ideal for creating summary reports and performing analysis.

Configuring Analytics

Analytics are configured in the Analytic Editor which is accessible from the Project Explorer. Here you will find a tab for each available analytic.

Under each tab, you can specify all the settings pertaining to that specific analytic including the real time tag that is the source of the calculation.

Analytics can be assigned to different groups so each set can operate at their own time frame.

Scheduling Analytics

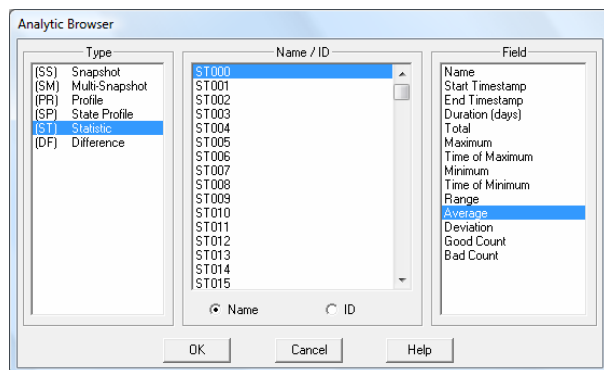
The second part of configuring analytics is scheduling them to execute.

Each analytic type needs 2 commands scheduled. The first command is an **Update**. This command goes out to the real time server, collects data and performs the calculations.

The second command is **Store**. This command stores the current calculated values and resets the analytics for the next time period.

Reporting Current Analytic Data

Once the values have been stored, they are available for reporting. To include the current data into a report, you need to configure Analytic connections from **XLReporter's** Connection Configurator.



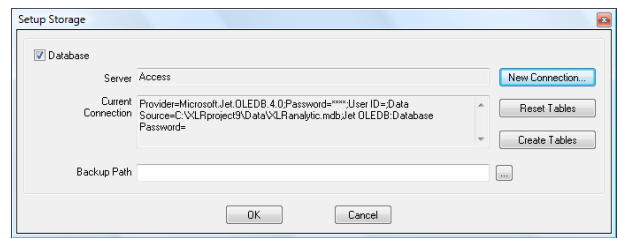
Analytic Browser

When updated, the last stored values of the analytics are retrieved and written to the report.

Logging Analytic Data to a Database

While reporting current analytic data is useful, going one step further, the data can be logged to a database. Once stored in the database, the analytic data is permanently available for use in one or many reports.

Logging is set up in the Analytic Editor by selecting Setup, Storage.

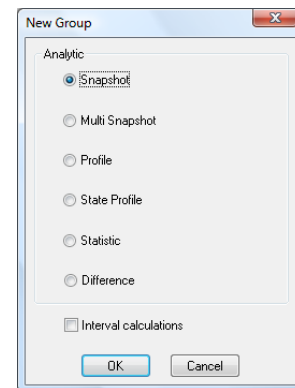


Setup Storage

Analytics can be logged to any database available on the system. As part of setting up the project, **XLReporter** has provided a blank database (XLRanalytic.mdb) in the Data subfolder of the project. This can be used if no other database is available.

Reporting Logged Analytic Data

Analytics logged to a database are accessed by building an Analytic Group. This can be done from either XLReporter's Project Explorer or Connection Configurator within Excel.



Analytic Group - Type

An Analytic Group is configured for a specific type. Up to 40 analytics from the selected type can be selected in the group.

The time period can be defined to retrieve the analytics logged over a particular time frame. This can be specific or a relative time like "the current day" or "over the month". The time period can also be set up to use **XLReporter's** variables so the group can be used as part of an interactive report.

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