

Generate Report Actions

Overview

XLReporter generates reports in Excel workbooks. The workbook can consist of a single worksheet or multiple worksheets. Each worksheet can be either an individual report or can be the same report but for a different time period.

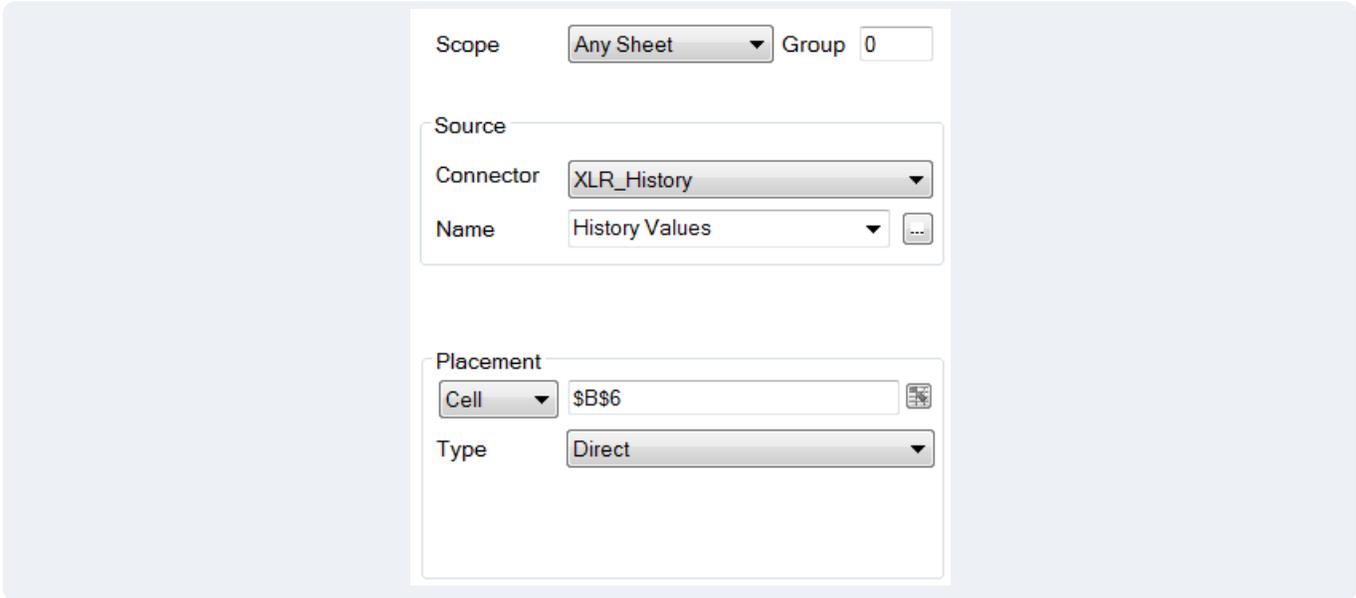
Going even further, since **XLReporter** can report on data from many different data sources, some data may need to be added to the report at one time (or event trigger) while other data may need to be added at another time. The data may be on separate worksheets or even on the same worksheet.

The following spotlight document describes all the options available to generate reports and when they should be used.

Template Settings

Before jumping into the actions to generate reports, first let's understand what settings are available when designing the template since these settings influence what action(s) need to be used.

Data Connections



The screenshot shows a configuration window for data connections with the following settings:

- Scope:** Any Sheet (dropdown), **Group:** 0 (text input)
- Source:**
 - Connector:** XLR_History (dropdown)
 - Name:** History Values (dropdown with a plus icon)
- Placement:**
 - Cell:** Cell (dropdown), \$B\$6 (text input with a grid icon)
 - Type:** Direct (dropdown)

For data connections there are two settings to pay particular attention to:

Scope

Scope defines what worksheet the connection is configured for. By default, the **Scope** is configured to *Any Sheet*. This means that this connection applies to any worksheet in the workbook.

In addition to *Any Sheet*, every worksheet in the template workbook is listed for **Scope**. This allows the connection to be applied to a specific worksheet in the template. Going further, if the worksheet specified for **Scope** has a **Report Name** configured for it, this connection is applied to any worksheet created from this one. For more information, see the Report Names section below.

Group

The **Group** can be used to control when connections are updated. By default, every connection is set with **Group** to 0. However, this can be changed to a specific number (> 0) to segregate the connections.

For example, if there is a real time data group that needs to be updated every hour of the day and an alarms data group to update at the end of the day, the real time data group connection would be configured with a specific group number (e.g., 1) and the alarm data group would be configured with another specific group number (e.g., 2).

Group 0 is treated differently than other specific groups. Any connection configured for **Group 0** is updated no matter what group number is specified for the action (this will be explained later in the document).

Group numbers can also be used to disable connections for troubleshooting purposes. This is done by setting the **Group** to -1.

Management Connections

Active By	Any Sheet	Group	0
Category	Worksheet		
Type	AutoFit Range		
Apply To	Cell \$A\$1		
Direction	Down		
End	All cells are empty		
Placement	Cell		
Type	Direct		
Setting	Value		
AutoFit	Column Width		

For management connections there are two settings to pay particular attention to:

Active By

Active By defines the worksheet which activates the connection. By default, this is configured to *Any Sheet*. This means that this connection is activated by any worksheet in the workbook.

In addition to *Any Sheet*, every worksheet in the template workbook is listed for **Active By**. This allows the connection to be applied to a specific worksheet in the template. Going further, if the worksheet specified for **Active By** has a **Report Name** configured for it, this connection is applied to any worksheet created from this one. For more information, see the Report Names section below.

If the management connection has additional parameters that are cell references and **Active By** is set to a specific worksheet, if the cell reference does not have a worksheet specified with it, the worksheet for the cell reference is the **Active By** worksheet.

Group

The **Group** number works the same way it does for data connections. It is important to note here that data connections are always updated before management connections. This means that if a management connection must be updated before a data connection, groups must be used to ensure that this happens.

Report Names

Template	Folder	Report	Over
WORKBOOK			
History Values		History Values_{MMM}{YYYY}	No
WORKSHEET			
*			
Template		{DD}	No

For **Report Names**, the **WORKSHEET** settings can be used to generate new worksheets within the report workbook when updated if the **Report Worksheet** is configured. The worksheets are collated in the **WORKBOOK**.

Report Actions

There are four actions that are available to generate and populate reports.

Update Workbook

The screenshot shows the 'Action' configuration interface. On the left, a tree view lists various actions under categories like 'Produce Reports', 'Publish Reports', and 'Transfer Reports'. The 'Update Workbook' action is selected. On the right, the configuration for this action is shown: the 'Action' dropdown is set to 'Update Workbook', and the 'Workbook' field contains 'History Values.xlsx'.

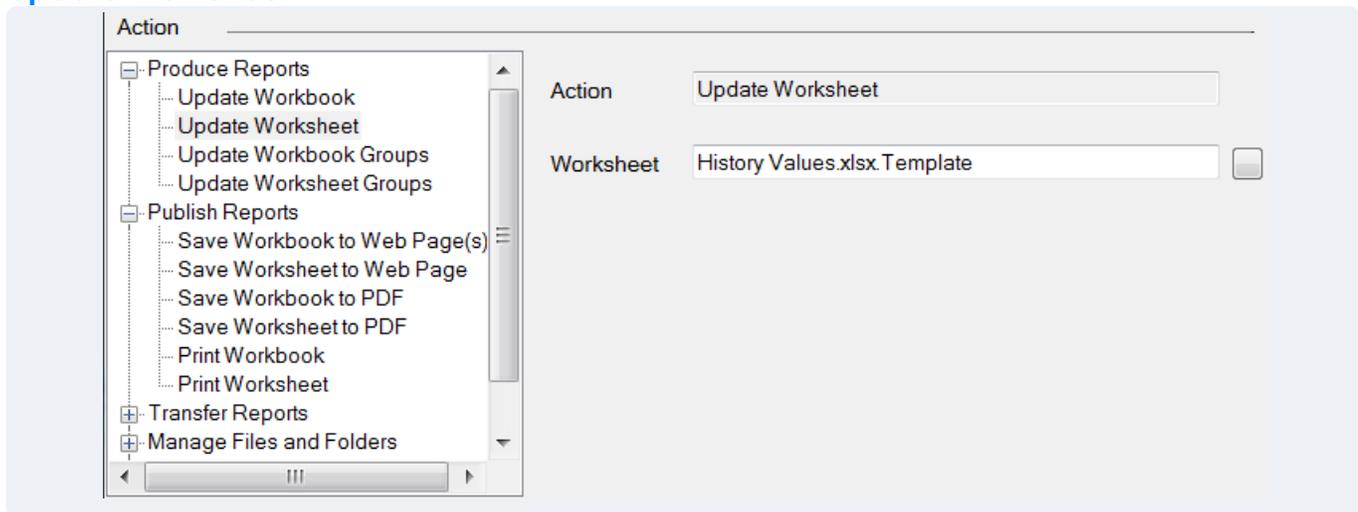
The **Update Workbook** action updates every worksheet in the workbook. This is best used with a template workbook that has multiple worksheets that all need to be updated at the same time.

The **Workbook** parameter for the action is the name of the template workbook to update. Before updating, the **Report Workbook** setting in **Report Names** is read and normalized and if the **Report Workbook** doesn't exist it is created.

For **Report Names**, the **Report Worksheet** settings do not take effect. No new worksheets are created.

This action only updates data connections with **Scope** set to a specific worksheet and management connections with **Active By** set to a specific worksheet. Anything set to *Any Sheet* will not be considered with this action.

Update Worksheet



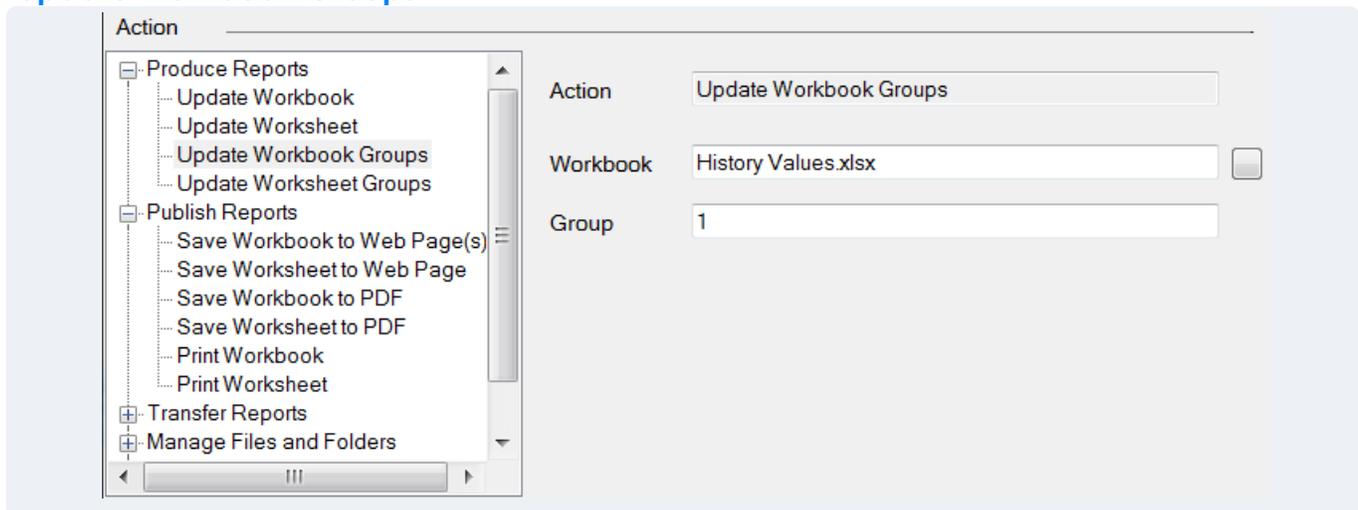
The **Update Worksheet** action updates a specific worksheet in the workbook. There are many situations where this action would be used including (but not limited to):

- A template workbook with multiple worksheets where each worksheet is updated at a different time (or on a different event).
- A template workbook with a single worksheet.
- A template workbook with a template worksheet that is used to create new worksheets.

The **Worksheet** parameter for the action is the name of the template workbook and worksheet to update in the format *Workbook.Worksheet*. Before updating, the **Report Workbook** setting in **Report Names** is read and normalized and if the **Report Workbook** doesn't exist it is created. Then if the worksheet specified for action has a **Report Worksheet** set for it, it is read and normalized and if it doesn't exist in the report workbook it is created.

This action updates data connections with **Scope** set to *Any Sheet* as well as those set to the worksheet specified in the action.

Update Workbook Groups



The **Update Workbook Groups** action updates a specific group of connections in every worksheet in the workbook. This is best used with a template workbook that has multiple worksheets and multiple groups across the worksheets.

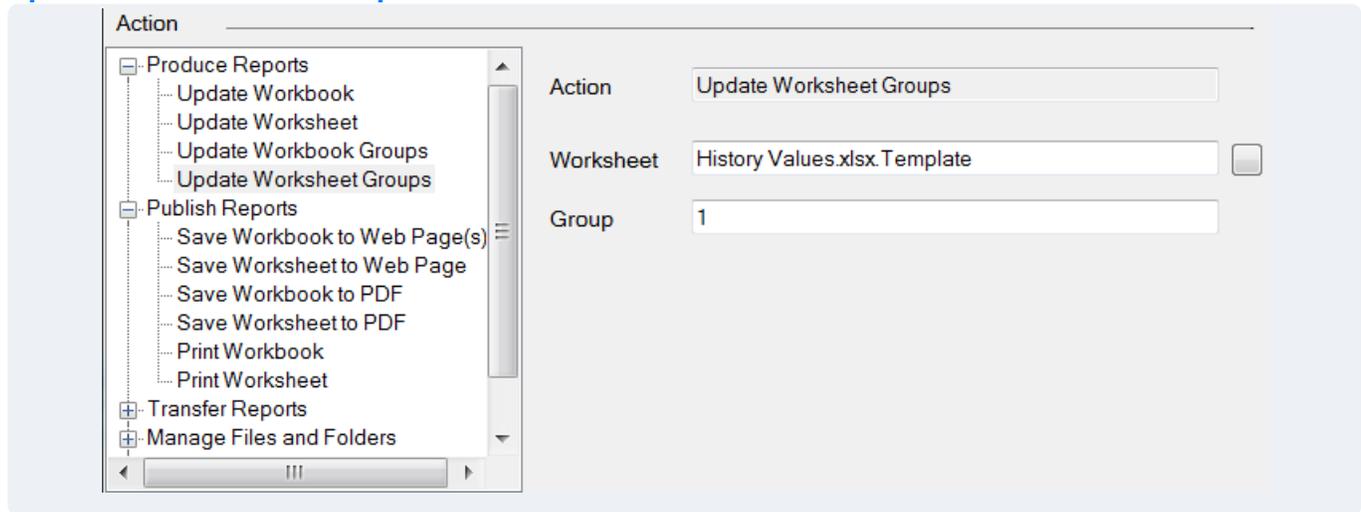
The **Workbook** parameter for the action is the name of the template workbook to update. Before updating, the **Report Workbook** setting in **Report Names** is read and normalized and if the **Report Workbook** doesn't exist it is created.

The **Group** parameter defines which group of connections to update. This can be a single group number or multiple group numbers, comma separated. When multiple groups are specified each group is updated in order as listed.

For **Report Names**, the **Report Worksheet** settings do not take effect. No new worksheets are created.

This action only updates data connections with **Scope** set to a specific worksheet and management connections with **Active By** set to a specific worksheet. Anything set to *Any Sheet* will not be considered with this action.

Update Worksheet Groups



The **Update Worksheet Groups** action updates a specific group of connections in a specific worksheet in the workbook. This is best used with a template workbook that has a single worksheet and multiple groups for that worksheet.

The **Worksheet** parameter for the action is the name of the template workbook and worksheet to update in the format *Workbook.Worksheet*. Before updating, the **Report Workbook** setting in **Report Names** is read and normalized and if the **Report Workbook** doesn't exist it is created. Then if the worksheet specified for action has a **Report Worksheet** set for it, it is read and normalized and if it doesn't exist in the report workbook it is created.

The **Group** parameter defines which group of connections to update. This can be a single group number or multiple group numbers, comma separated. When multiple groups are specified each group is updated in order as listed.

This action updates data connections with **Scope** set to *Any Sheet* as well as those set to the worksheet specified in the action.

Typical Scenarios

The following presents a series of reporting scenarios to highlight report generate actions.

Daily Report in Monthly Workbook

In this scenario a daily report is required to be generated at the end of the day in a workbook for the month.

The template workbook consists of one worksheet, *Template*.

Scope Group

Source

Connector

Name

Placement

Cell

Type

For the data connection, the **Scope** is set to *Any Sheet* and **Group** is set to 0.

Template	Folder	Report	Over
WORKBOOK			
History Values		History Values_{MMM}{YYYY}	No
WORKSHEET			
*			
Template		{DD}	No

In **Report Names**, for the *Template* worksheet, the **Report Worksheet** is set to the day of the month {DD}.

Action

- Produce Reports
 - ... Update Workbook
 - ... Update Worksheet
 - ... Update Workbook Groups
 - ... Update Worksheet Groups
- Publish Reports
 - ... Save Workbook to Web Page(s)
 - ... Save Worksheet to Web Page
 - ... Save Workbook to PDF
 - ... Save Worksheet to PDF
 - ... Print Workbook
 - ... Print Worksheet
- Transfer Reports
- Manage Files and Folders

Action

Worksheet

For the schedule, the **Action** is set to *Update Worksheet*. This must be used because when triggered, it will create the new worksheet for the day before populating the report with data.

Daily Workbook with Multiple Report Worksheets

In this scenario a daily report is required for three pieces of machinery: *Mixer*, *Extruder* and *Reactor*. Each piece of machinery is a separate worksheet in the workbook. All of these reports can be updated at the same time, at the end of the day.

The template workbook has three worksheets: *Mixer*, *Extruder* and *Reactor*.

	Group	Connector	Source	Target	Place
	0	XLR_History	Daily Mixer	Mixer!\$B\$8	Direct
	0	XLR_History	Daily Extruder	Extruder!\$B\$8	Direct
	0	XLR_History	Daily Reactor	Reactor!\$B\$8	Direct
	▶*				

For the data connections, the **Scope** for each connection is set to the specific worksheet and **Group** is set to 0.

Template	Folder	Report	Over
WORKBOOK			
Daily Machinery		Daily Machinery{YYYY}-{MM}-{DD}	No
WORKSHEET			
*			
Mixer			
Extruder			
Reactor			

There are no **Worksheet Reports** configured for the template. Each worksheet is updated directly.

To generate the report an *Update Workbook* **Action** is configured. This will create the report workbook for the day and update all three worksheets in the workbook at one time.

Cycle Report with Data Captured at the Start, During and End of the Cycle

In this scenario a cycle report is required from the process where some data is brought into the report at the beginning of the cycle, some during the cycle and then some at the end of the cycle. Each cycle report is a worksheet within a report workbook for the day.

The template workbook consists of one worksheet: *Template*.

	Group	Connector	Source	Target	Place
	1	Expressions	{DATE}	\$B\$4	Direct
	1	Expressions	{TIME}	\$B\$5	Direct
	2	XLR_DA	Cycle Report	\$B\$10	Insert At End
	3	Expressions	{DATE}	\$D\$4	Direct
	3	Expressions	{TIME}	\$D\$5	Direct
	▶*				

For the data connections, there are connections set to **Group 1** to bring in the date and time at the start of the cycle, **Group 2** to bring in real time process data during the cycle, and **Group 3** to bring in the end time at the end of the cycle.

Template	Folder	Report	Over
WORKBOOK			
Cycle Report		Cycle Report{YYYY}-{MM}-{DD}	No
WORKSHEET			
*			
Template		{RG000}	No

The **Report Worksheet** for *Template* is set to an **XLReporter** Register (RG000) which will be set to the name of the cycle when it starts.

	Condition	Action
<input checked="" type="checkbox"/>	Cycle Report	
<input checked="" type="checkbox"/>	XLR_DA Cycle_Start = 1	Set RG000 {<XLR_DA>Cycle_ID}
<input checked="" type="checkbox"/>	XLR_DA Cycle_Start = 1	UpdateGroupSheet Cycle Report.xlsx.Template 1
<input checked="" type="checkbox"/>	XLR_DA Cycle_Start = 1; Recur 5 minutes(s); Event Time	UpdateGroupSheet Cycle Report.xlsx.Template 2
<input checked="" type="checkbox"/>	XLR_DA Cycle_Start = 0	UpdateGroupSheet Cycle Report.xlsx.Template 3

For the schedule, when the cycle starts, the Register (RG000) is set to the cycle name and the **Group 1** connections are updated to bring in the start date and time into the report.

Every 5 minutes while the cycle is running the **Group 2** connection is updated to bring in real time data into the report.

When the cycle ends, the **Group 3** connections are updated to bring in the end date and time into the report.