



zenon
by COPA-DATA

Report Engine manual Report Launcher

v.12



COPA-DATA

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Table of contents

| | | |
|----------|---|-----------|
| 1 | Welcome to COPA-DATA help | 5 |
| 2 | Report Launcher | 5 |
| 3 | Rights management | 7 |
| 4 | Report Launcher: Configuration and operation | 7 |
| 4.1 | Tile View | 9 |
| 4.2 | Details View | 11 |
| 4.3 | Settings | 13 |
| 4.4 | Folder, reports and database context menus | 14 |
| 4.5 | Move elements | 16 |
| 4.6 | Download report | 17 |
| 4.7 | Languages and time formats | 17 |
| 4.7.1 | Change standard time/day light saving time | 18 |
| 4.8 | Parameters - input and selection | 19 |
| 4.8.1 | Default input field | 22 |
| 4.8.2 | Boolean selection dialog | 22 |
| 4.8.3 | Input or selection of several values | 22 |
| 4.8.4 | Date and time | 24 |
| 4.8.5 | Time span | 32 |
| 4.8.6 | Equipment group | 39 |
| 4.8.7 | Lot and shift | 42 |
| 4.8.8 | Filters | 43 |
| 4.8.9 | Sorting of filter elements | 49 |
| 4.9 | Site Settings | 50 |
| 4.9.1 | General | 50 |
| 4.10 | Data Source | 51 |
| 4.10.1 | Properties | 52 |
| 4.11 | Folder | 54 |
| 4.11.1 | Properties | 57 |
| 4.12 | Upload file | 57 |
| 5 | Create report | 58 |
| 5.1 | Report Builder | 59 |
| 5.2 | Upload reports | 60 |

| | | |
|-----------|--|-----------|
| 6 | Call up report | 61 |
| 7 | Toolbar Report..... | 63 |
| 8 | Configure and export reports | 64 |
| 9 | Manage reports | 67 |
| 9.1 | Properties..... | 68 |
| 9.2 | Parameter..... | 69 |
| 9.3 | Data Sources..... | 73 |
| 9.4 | Processing Options | 74 |
| 9.4.1 | Schedule | 77 |
| 9.5 | Cache Refresh Options | 78 |
| 9.6 | Report History..... | 79 |
| 9.7 | Snapshot Options..... | 79 |
| 10 | Validation of formulas | 80 |
| 11 | Error logging | 82 |
| 11.1 | Diagnosis Viewer..... | 82 |
| 11.1.1 | General | 84 |
| 11.1.2 | Topology of the diagnosis system | 85 |
| 11.1.3 | Procedure | 86 |
| 11.1.4 | Diagnosis Server | 93 |
| 11.1.5 | Diagnosis Client | 98 |
| 11.1.6 | Diagnosis Viewer - Analysis Program | 101 |
| 11.1.7 | Possibilities of Filtering | 107 |
| 11.1.8 | Reading the LOG files..... | 114 |
| 11.1.9 | Structure of the LOG file | 117 |
| 11.1.10 | Handling of errors and messages for the Diagnosis Viewer | 119 |
| 11.2 | Report Engine error messages in general | 121 |

1 Welcome to COPA-DATA help

GENERAL HELP

If you cannot find any information you require in this help chapter or can think of anything that you would like added, please send an email to documentation@copadata.com.

LICENSES AND SERVICES

If you find that you need other zenon services or licenses, our staff will be happy to help you. Email sales@copadata.com.

PROJECT SUPPORT

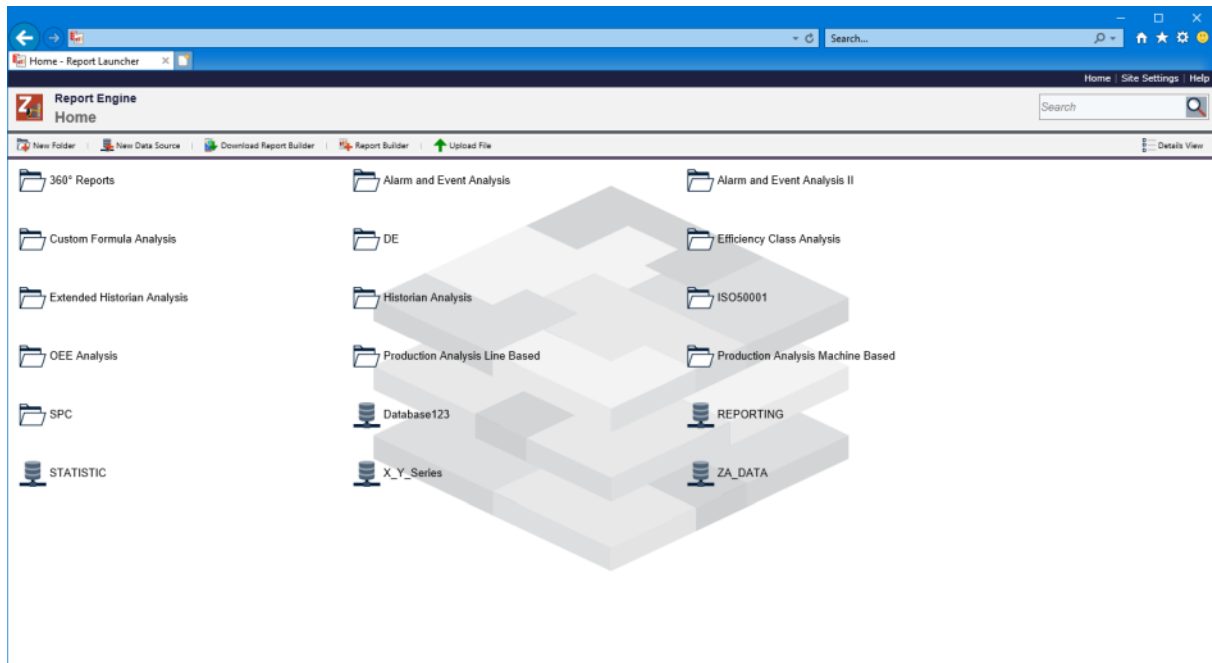
You can receive support for any real project you may have from our customer service team, which you can contact via email at support@copadata.com.

2 Report Launcher

Reports display data from online sources or archives according to defined rules. Report Engine is supplied with prepared report templates that can be adapted individually. You can also create your own reports. The necessary table structure is described in chapter Basics.

To call up and display reports on the client computer, all you need is a supported browser (on page 7). All reports are displayed and adapted in the browser. Which settings are possible, depends on the rights (on page 7) of the user. Reports can be exported in other formats. Thus being used in other applications.

As supplied, pre-configured folders with reports on the respective topic areas are displayed for the demo project when Report Engine is started:



Information

Only reports that are included in the scope of the Report Engine license that has been purchased are displayed.

CONFIGURATION OF REPORTS

Reports can be configured in the browser.

They are created in Reporting Studio.



Information

Handling with time interval for archive aggregation and display in the report:

- ▶ Interval less or equal to 60 minutes:
The correct time interval in UTC is noted for aggregation.
- ▶ Interval greater than 60 minutes:
The correct time interval in the server's local time is noted for aggregation.
- ▶ Local time is always used for the display. If the user and server are in different time zones, there may be differences.

PROJECTS AND FILTERS

Reports can generally be created throughout several projects.

Attention

Archive data can only be evaluated if the variables and archive configuration are in the same project.

This means: For example, in an integration project, if a variable from a subproject is archived in an archive, then Report Engine cannot access this variable.

3 Rights management

Report Engine uses role-based rights management. It controls the access to the data sources, folders, reports and all other elements. At this certain rights are assigned to a user or a group. Users and groups must already exist in the Window user administration. Authentication is not carried out by Report Engine, but by the operating system.

User rights are set and administered in Reporting Studio.

4 Report Launcher: Configuration and operation

Report Engine called up via the web browser or started via Reporting Studio:

- ▶ Calling it up via the user interface:
Entry of connection in address line or click on the link in the start menu of the installation computer (COPA-DATA section)
- ▶ Start via Reporting Studio:
The following actions start the web browser with Report Launcher for the connection set in Reporting Studio:
 - Selection of the corresponding command from the **Report** menu
 - Click on the corresponding symbol in the toolbar
 - Click on the **Open report in Report Launcher** button in a report in Reporting Studio

REPORT LAUNCHER

The user interface of Report Launcher gives you the possibility to:

- ▶ Configure Report Launcher
- ▶ To configure and call up reports

Report Launcher can be called up in two views:

- ▶ Tile View (on page 9)
- ▶ Detail view (on page 11)

BROWSER

Report Engine is called up using a browser.



Information

Report Engine was designed and tested for the following browsers:

Microsoft Internet Explorer from version 10 (up to and including Windows 10 and normal view only)

Edge

Chrome

Firefox

Notes:

Compatibility view must be deactivated for Internet Explorer.

Zoom is only available for the Chrome and Edge browsers.

You can predefine which browser is to be used in the settings in Reporting Studio.

Error handling

⚠ Attention

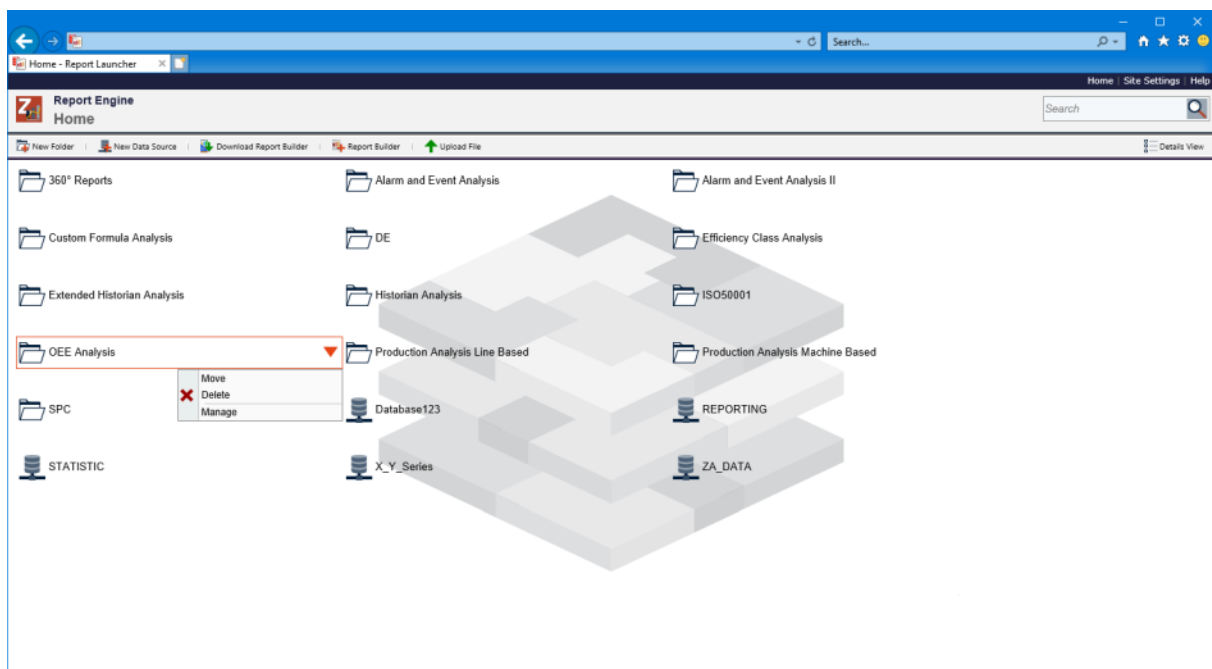
Error messages for parameters:

For some parameters, the values available must be loaded via a Stored Procedure of Microsoft SQL Server. If this Stored Procedure is not successfully called up or the Stored Procedure returns an error, an error message is activated in Report Launcher. For example, if Service Engine cannot be reached, the SQL connector has not been created, etc.

For some parameters, no proposed value can be issued under some circumstances, because a parameter that is to be handled beforehand does not contain a value.

For example: Time filters are based on shifts, but there is no shift data available. In this case, the issue of proposed values is only possible if at least 1 shift has been written.

4.1 Tile View



CONFIGURATION MENU

| Option | Description |
|--------|--------------------------------|
| Home | Switches to the highest level. |

| Option | Description |
|---------------|---|
| Site Settings | Opens the administration (on page 50) of general settings of the site. |
| Help | Opens the online help for Report Launcher. |
| Search Field | <p>Search in Report Launcher.</p> <p>Entry of the search term in the search field. Click on the magnifying glass symbol to start the search.</p> <p>Note: Clicking on the symbol does not trigger any action in Firefox, Edge or Chrome. Instead, press the Enter key.</p> |

MAIN MENU

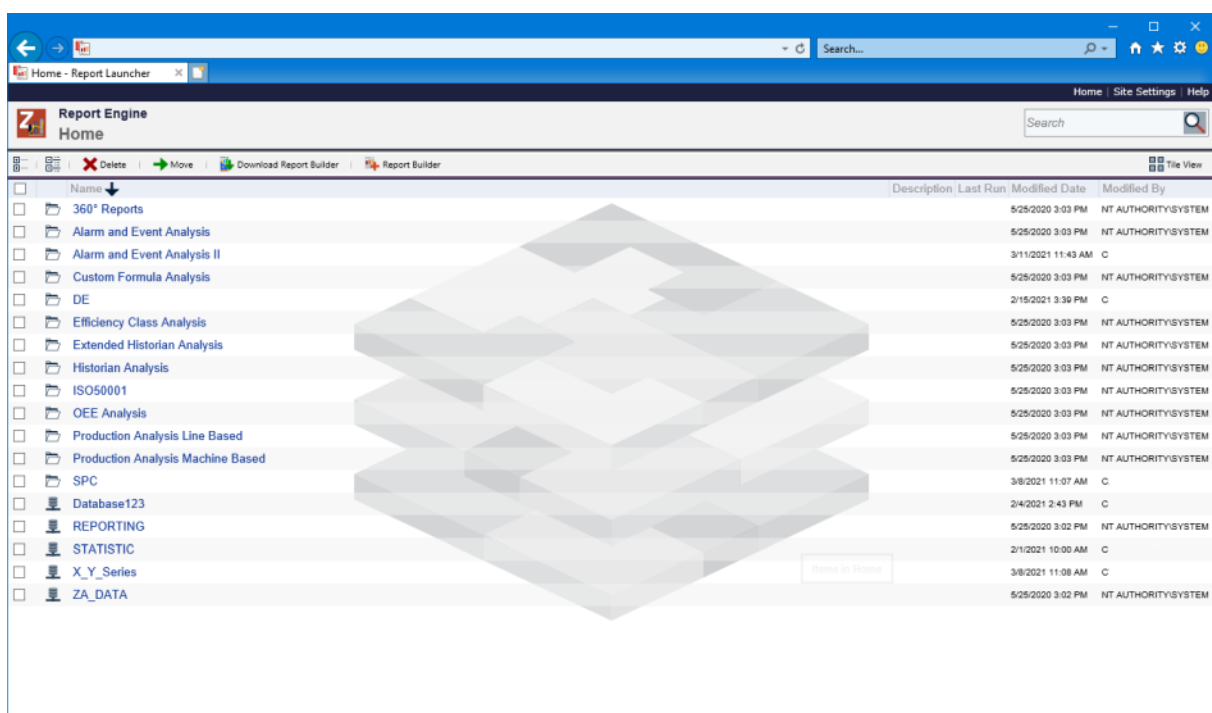
| Option | Description |
|--------------------------|---|
| Main Menu | |
| New Folder | Creates a new folder (on page 54). |
| New Data Source | Creates a new data source (on page 52). |
| Download Report Builder | Opens the Microsoft website to download the Report Builder. |
| Report Builder | <p>Opens the Microsoft Report-BUILDER (on page 59). Requirement: The Microsoft Report-BUILDER must already be present on the system.</p> <p>Note: Is not supported by Chrome or Firefox.</p> |
| Upload File | Opens the dialog for uploading resources (on page 57) such as reports, models, data sets, etc. |
| Details view - Tile view | <p>Switches from detail view to symbol view.</p> <p>Tile view: Shows all folder and reports in a compact view. In this view folders can be hidden (on page 54).</p> <p>Detail View: Shows details on reports and folders and allows them to be sorted by clicking on the respective header:</p> <p style="margin-left: 40px;">Object type (2nd column)</p> <p style="margin-left: 40px;">Name</p> |

| Option | Description |
|--------|--|
| | <p>Description</p> <p>Last run</p> <p>Modified Date</p> <p>Modified By</p> <p>Both views provide a context menu (on page 14) with frequently-required commands for folders, reports and databases.</p> |

LIST FIELD REPORTS

| Option | Description |
|---------------------------|--|
| List field Reports | <p>Shows all databases, folders and reports. The display can be in a symbol view or detail view. The possible actions depend on the type of the display.</p> <p>Reports for configuration and display are selected here.</p> |

4.2 Details View



| Name | Description | Last Run | Modified Date | Modified By |
|-----------------------------------|-------------|--------------------|---------------------|-------------|
| 360° Reports | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| Alarm and Event Analysis | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| Alarm and Event Analysis II | | 3/11/2021 11:43 AM | C | |
| Custom Formula Analysis | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| DE | | 2/15/2021 3:36 PM | C | |
| Efficiency Class Analysis | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| Extended Historian Analysis | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| Historian Analysis | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| ISO50001 | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| OEE Analysis | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| Production Analysis Line Based | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| Production Analysis Machine Based | | 5/25/2020 3:03 PM | NT AUTHORITY\SYSTEM | |
| SPC | | 3/8/2021 11:07 AM | C | |
| Database123 | | 2/4/2021 2:43 PM | C | |
| REPORTING | | 5/25/2020 3:02 PM | NT AUTHORITY\SYSTEM | |
| STATISTIC | | 2/1/2021 10:00 AM | C | |
| X_Y_Series | | 3/8/2021 11:08 AM | C | |
| ZA_DATA | | 5/25/2020 3:02 PM | NT AUTHORITY\SYSTEM | |

CONFIGURATION MENU

| Option | Description |
|---------------|---|
| Home | Switches to the highest level. |
| Site Settings | Opens the administration (on page 50) of general settings of the site. |
| Help | Opens the online help for Report Launcher. |
| Search Field | <p>Search in Report Launcher.</p> <p>Entry of the search term in the search field. Click on the magnifying glass symbol to start the search.</p> <p>Note: Clicking on the symbol does not trigger any action in Firefox, Edge or Chrome. Instead, press the Enter key.</p> |

MAIN MENU

| Option | Description |
|-------------------------|--|
| Main Menu | |
| Expand all | Clicking on the button opens all elements in the tree view. |
| Collapse all | Clicking on the button collapses all elements in the tree view. Only the highest level is displayed. |
| Delete | Deletes selected reports or folders. The selection takes place by activating the check box in front of the report/folder. |
| Move | Moves selected reports or folders. The selection takes place by activating the check box in front of the report/folder. |
| Download Report Builder | Opens the Microsoft website to download the Report Builder. |
| Report Builder | <p>Opens the Microsoft Report-BUILDER (on page 59). Requirement: The Microsoft Report-BUILDER must already be present on the system.</p> <p>Note: Is not supported by Chrome or Firefox.</p> |

| Option | Description |
|-----------|---|
| Tile View | <p>Switches from detail view to symbol view.</p> <p>Tile view: Shows all folder and reports in a compact view. In this view folders can be hidden (on page 54).</p> <p>Detail View: Shows details on reports and folders and allows them to be sorted by clicking on the respective header:</p> <ul style="list-style-type: none"> Object type (2nd column) Name Description Last run Modified Date Modified By <p>Both views provide a context menu (on page 14) with frequently-required commands for folders, reports and databases.</p> |

LIST FIELD REPORTS

| Option | Description |
|--------------------|--|
| List field Reports | <p>Shows all databases, folders and reports. The display can be in a symbol view or detail view. The possible actions depend on the type of the display.</p> <p>Reports for configuration and display are selected here.</p> |

4.3 Settings

Data sources and reports are managed and configured via menu bars (on page 7) and context menus (on page 14).

See also:

- ▶ Configuration and operation (on page 7)
- ▶ Site (on page 50)
- ▶ Folder (on page 54)
- ▶ Reports (on page 67)

4.4 Folder, reports and database context menus

Databases, folders and reports have a context menu for configuration. Its contents sometimes also depend on which view is displayed in the Report Launcher.

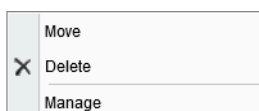
To select a command from the context menu:

1. Move the mouse over the desired object.
A red border and red arrow are displayed.
2. Click on the arrow.
The context menu is displayed.
3. select the desired command.

CONTEXT MENU FOLDER

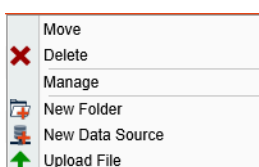
The context menu of folders contains different commands, regardless of the Report Launcher view.

TILE VIEW



| Command | Description |
|---------|--|
| Move | Opens dialog (on page 16) for selecting the new saving location. |
| Delete | Deletes selected folder. |
| Manage | Opens the dialog for managing (on page 57) the folder. |

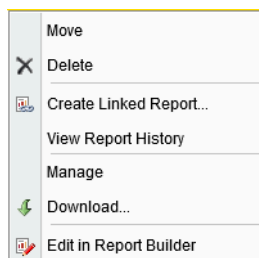
DETAILS VIEW



| Command | Description |
|------------------------|--|
| Move | Opens dialog (on page 16) for selecting the new saving location. |
| Delete | Deletes selected folder. |
| Manage | Opens the dialog for managing (on page 57) the folder. |
| New folder | Opens dialog to create a new folder. |
| New Data Source | Opens the dialog (on page 52) to select a new data source. |
| Upload file | Opens the dialog (on page 57) for uploading a new file. |

REPORT CONTEXT MENU

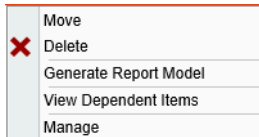
The context menu of reports contains commands for their administration. The context menu is identical for both views of the Report Launcher.



| Command | Description |
|--------------------------------------|---|
| Move | Opens menu for selecting the new saving location. |
| Delete | Deletes selected reports. |
| Create linked report... | Opens the dialog for creating a linked report which is based on the selected report. |
| Display report history | Opens the display of the report history (on page 79). |
| Manage | Opens the dialog for managing the report (on page 68). |
| Download | Makes it possible to locally save (on page 17) reports. Opens Windows dialog for saving a file. |
| Editing in the Report Builder | Opens the report in the MS Report Builder (on page 59). |

DATABASE CONTEXT MENU

The context menu of databases contains commands for their administration. The context menu is identical for both views of the Report Launcher.



| Option | Description |
|------------------------------|--|
| Move | Opens menu for selecting the new saving location. |
| Delete | Deletes selected reports. |
| Generate Report Model | Opens the dialog (on page 54) to generate a new model for the data source. |
| View Dependent Items | Displays all reports based in this data source and makes it possible to delete or move them. |
| Manage | Opens the dialog (on page 52) to administer the database. |

4.5 Move elements

To change the save location of an object:

1. Highlight the object (folder, report, database).
2. Click on the arrow.
3. in the context menu, select the **Move** command.
The dialog for selecting a new save location is opened.
4. Enter, in the **Save location** input field, the desired location or select it from the list of the folders.
5. Confirm the selection by clicking **OK**.

MOVE DIALOG ELEMENTS

| | | | |
|------------------------------|-------------|---------|---------------------------|
| Variable name (VariableName) | From (From) | To (To) | Consumption (Consumption) |
|------------------------------|-------------|---------|---------------------------|

| Parameter | Description |
|--------------------------|---|
| Storage directory | State the desired save location. Entry in the field or selection from the Folder selection tree. |
| Folder selection | Selection of a folder as a save location. Clicking on the folder accepts the selection in the Save location field. |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

4.6 Download report

Reports can be downloaded from the Server to the local computer in order to edit or present them offline.

To download a report:

1. Move the mouse over the report.
2. Click on the arrow.
3. Select the command **Download**
The dialog to save documents is displayed.
4. Select the saving location on the local computer.

4.7 Languages and time formats

USER INTERFACE LANGUAGE

Report Engine can be displayed in several languages on the web client. As far as selected in the browser, the user interface is displayed in:

- ▶ Chinese (simplified Chinese)
- ▶ German
- ▶ English
- ▶ French
- ▶ Italian
- ▶ Japanese
- ▶ Russian

- ▶ Spanish
- ▶ Czech

For all other languages, English is pre-set as a default language. You configure the language in the browser using the respective dialog for language selection.

REPORT LANGUAGE

The language of the report is either predefined or is freely selectable using online language selection.

- ▶ Reports with online language selection The language is selected in Report Launcher from the **Language** drop-down list.
Exception: The language is predefined in Reporting Studio as the direct value.
This affects the translation of report contents and the time/number format.
- ▶ Reports without online language switching:
The translation of content depends on the deployment language and the language of Service Engine.
Time format and number format are applied from the browser language.

TIME FORMATS

Time formats correspond to the conventions of the language set in the browser.

Note: If one of the following errors occurs, check the settings for language and time stamp formats:

- ▶ Drop-down list for date and time selection does not work
- ▶ Report Launcher reports an incorrectly-formatted time stamp

TEXTS

Texts are displayed as they are entered in the report or output by the server.

4.7.1 Change standard time/day light saving time

The switch from standard time to daylight saving time and vice versa can lead to anomalies with intervals at the time of switching. These arise as a result of the functions provided by the .NET Framework, **DateTime.ToLocalTime** and **DateTime.ToUniversalTime**.

INTERVALS

| Compression | DSTstart | DSTend |
|-------------|---|---|
| Minutes | Interval in local time: DSTstart – 1 | Interval in local time: DSTend – 1 |

| Compression | DSTstart | DSTend |
|-------------|--|---|
| | minute, DSTstart + 1 hour) Interval in UTC : 1 minute | minute, DSTend Interval in UTC : 1 hour and 1 minute |
| Hour | Interval (DSTstart , DSTstart +1) is not present. | Interval in local time: DSTend –2, DSTend –1 Interval in UTC : 2 hours |

Key:

- ▶ **DSTstart**: Time of the switch from standard time to daylight-saving time in local time.
This means: The clocks are moved forward by 1 hour at the time of **DSTstart**.
- ▶ **DSTend**: Time of the switch from standard time to daylight-saving time in local time.
This means: The hours are put back by 1 hour at the time of **DSTend**.

4.8 Parameters - input and selection

The user defines via dialogs and input fields (control elements) the values which should be displayed in a report. The dialogs for parameter input are displayed when a report is opened which needs parameters.

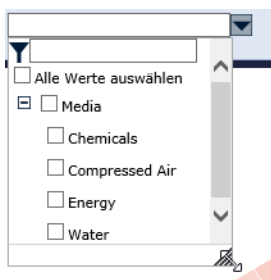
The parameters are sent to the Report Engine server by clicking the **View report** button. It checks the values entered by the user to see that they are valid. For valid parameters the respective report is displayed; otherwise an error message is displayed.

ADAPT DROP-DOWN LIST

There are drop-down lists available for input, selection and filtering. The size of most of the drop-down lists can be adjusted. The exceptions to this are the parameters for the input of a time range and the selection of date and time.

To adjust the size of a drop-down list:

1. Move the mouse to the touch area in the lower right corner until the mouse pointer becomes a double-arrow.



2. With the left mouse button pressed, drag it to the desired size

Note: the original size is the minimum size

VALIDATION

When data is transferred between the browser and Report Engine Server, the values of a parameter are always transmitted as text. The following parameters must always have valid values:

- ▶ **Bool**
- ▶ Date and time

The following conditions are checked at the parameter validation. Errors are displayed in the view window of Report Engine:

| Entry | Limitation |
|---------------------------|---|
| Value available | A value must have be entered or selected. This validation is always carried out before sending the parameter to the Report Engine server. |
| String validation | For parameters of data type Text no additional validations are carried out. |
| Boolean validation | <p>For Bool data type parameters, the value must be either <i>true</i> or <i>false</i>. Capitalization/use of small letters is not checked.</p> <p>Comment: The Boolean selection dialog (on page 22) sends only valid values, but validation may be needed if Report Engine is controlled directly via URLs.</p> |
| Integer validation | <p>For parameters of data type Integer the value must not contain another character as the following:</p> <ul style="list-style-type: none"> ▶ A plus or a minus character as first character. ▶ All numbers allowed in the culture of the user. ▶ The thousands separator in the culture of the user. All included thousands separator are removed at the beginning of the integer validation. |
| Float validation | <p>For parameters of data type Float the value must not contain another character as the following:</p> <p>A plus or a minus character as first character.</p> <p>All numbers allowed in the culture of the user.</p> <p>The thousands separator in the culture of the user. All thousand separators that are included are removed at the beginning of the integer validation.</p> |

| Entry | Limitation |
|---------------------------------|---|
| | <p>Exactly one decimal separator in the culture of the user. If there are no numbers in front of or after the decimal separator, a 0 is assumed.</p> <p>Note: No numbers in front of and after the decimal separator is not allowed.</p> |
| Date and time validation | <p>For parameters of data type date and time the following criteria must be adhered to:</p> <p>The value of the parameter must correspond to a valid date and time format of the culture of the user.</p> <p>The numbers in date and time must be able to be assigned to a valid value. For example, the character string <i>45.18.2011 35:68:99</i> is invalid as there is no such date or time.</p> <p>If the character string does not contain a time, <i>00:00:00</i> is assumed.</p> <p>The time is rounded to minutes. If a time contains seconds, it is rounded down to the preceding minute if the value is less than 30. For values larger or equal to 30 it is rounded up to the next minute. The rounding considers jumps for minutes, hours, days, months and years.</p> <p>The rounded result must lie within the following limits: Minimum = <i>1.1.1900 00:00:00</i> Maximum = <i>1.1.[current year + 10] 00:00:00</i> The maximum corresponds to the end of the year 10 years from the current date.</p> |

CONDITIONS FOR VALUES OF THE PARAMETER

At the definition of a report (e.g. in the Report Builder (on page 59)) you must adhere to the following restrictions for parameters with predefined values:

- ▶ The value must not be **NULL**.
 - ▶ The label can be NULL, with the exception of those for equipment group and shift. In this case the value is used as label.
 - ▶ Each value must be unique.
Different predefined values with the same value field are not allowed.
 - ▶ The label must be unique.
Different predefined values with the same label field are not allowed.
- Exception:** Values from equipment groups with the same labels are permitted if they are not in the same area of the tree. The same labels for root elements and the same labels for

elements with the same superordinate nodes thus lead to errors.

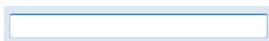
Attention: A value without label can also lead to a duplicate if its label matches another predefined value.

Attention

The parameter validation by the Report Engine server is not a precaution against attacks via SQL injection, but only a check of valid report values. Counteractions against attacks must be done by the designer of the SQL stored procedures.

4.8.1 Default input field

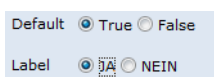
The default input field permits to enter exactly one value for a parameter. This input field is displayed for all parameters which do not call for a specialized dialog.



4.8.2 Boolean selection dialog

The selection dialog for **BOOL**- makes it possible to select one of the values for Boolean parameter which can receive a label:

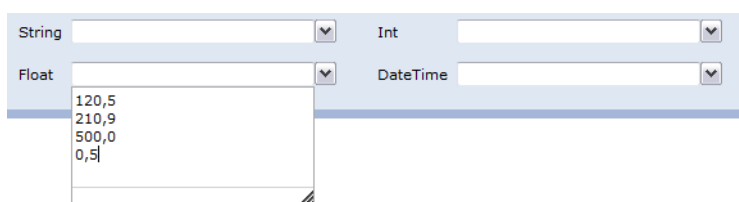
- ▶ *True*
- ▶ *False*



4.8.3 Input or selection of several values

INPUT SEVERAL VALUES

This dialog allows entering several values for a parameter. Here each line corresponds to a value. Empty lines are ignored.



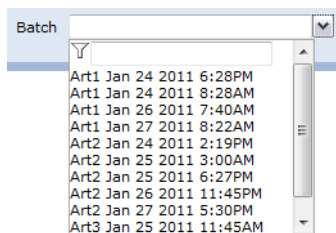
To enter values:

1. Click on the input field.
The input field is opened.
2. Enter the values line by line or select these from the drop-down list.
3. Click next to the input field.
The input field is closed. The values are displayed separated by semicolon.

Alarm classes High; Low; Middle

SELECTION OF A VALUE FROM SEVERAL PREDEFINED VALUES

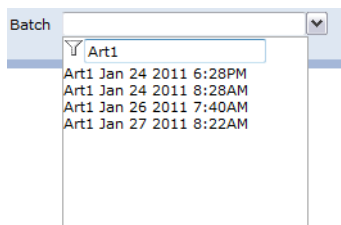
This dialog allows the selection of one value from several predefined values. The values are always displayed in alphabetical order.



To select a value:

1. Click on the input field.
The input field is opened.
2. Filter the entries or select a value.
3. Click next to the input field.
The input field is closed. The value is displayed in the input field.

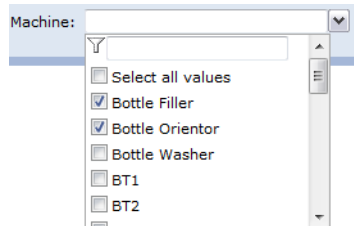
The dialog can be displayed filtered (on page 43).



SELECTION OF SEVERAL VALUES FROM SEVERAL PREDEFINED VALUES

This dialog allows the selection of several values from several predefined values. The values are always displayed in alphabetical order. The selection takes place by activating the check box in front

of the entry. As soon as more than one entry is displayed, the list has a check box for selecting/deselecting all values.



To select several values:

1. Click on the input field.
The input field is opened.
2. Filter the entries or select the desired values.
3. Click on *Select all values* to select all values
In doing so, the following applies:

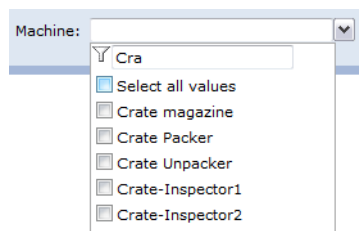
The first click in the *Select all values* checkbox selects all entries.

The second click cancels the selection.

This selection always affects the currently-displayed values only; values that have been filtered out are not affected.

4. Click next to the input field.
The input field is closed. The values are displayed separated by semicolon.

The dialog can be displayed filtered (on page 43).



4.8.4 Date and time

The dialog for date and time have different selection possibilities, depending on the configuration of the report:

- ▶ **Year** (on page 25): Selection of the year
- ▶ **Month** (on page 26): Selection of the month
- ▶ **Day** (on page 27): Selection of a day

- ▶ **Hours** (on page 27): Selection of the hours
- ▶ **Time** (on page 29): Selection of the hours and minutes

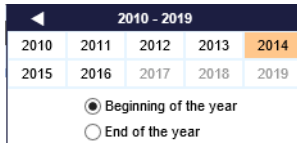
BASICS

- ▶ The calendar week and the beginning of the week in the selection dialog complies with norm **ISO 8601**. Therefore:
the first weekday is always a Monday
and January 4 is always in the first calendar week of a year
- ▶ The display of the time in *24-hour* format or *12-hour* format depends on the setting of language culture in the browser.

4.8.4.1 Year

Selection of the year for display in the report. The time period ranges from 1900 to 10 years in the future from the current date.

SELECTION OF YEAR



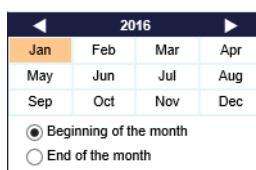
| Option | Description |
|------------------------------|---|
| Header | <p>In the header you can jump to the decade view of the previous or next decade by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous decade. ▶ Arrow right. Switches to the subsequent decade. <p>In view 1900 - 1910 you cannot navigate to the previous decade.</p> |
| Selection of year | <p>The selected year is displayed in bold. If there is no value set, the current year is displayed in bold.</p> <p>Clicking on a year accepts the year as a time point and closes the dialog. The day and time are defined using the two control elements Beginning of the year and End of the year.</p> |
| Beginning of the year | <p><i>Active: January 1st, 00:00:00 is configured as the day and</i></p> |

| Option | Description |
|------------------------|--|
| | time.January, 00:00:00 is configured as the day and time. |
| End of the year | <i>Active: January 1st of the subsequent year, 00:00:00 is configured.</i> |

4.8.4.2 Month

Selection of a month for display in the report.

SELECTION OF MONTH




| Option | Description |
|-------------------------------|---|
| Header | <p>It is possible to change to other years in the header by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous year. ▶ Arrow right: Switches to the following year. ▶ Year: Opens the dialog to select the year (on page 25). |
| Selection of month | <p>The selected month is displayed in bold. If there is no value, the current month is displayed in bold.</p> <p>Clicking on a month accepts the month as a time point and closes the dialog. The day and time are defined using the two control elements Beginning of the month and End of the month.</p> |
| Beginning of the month | <i>Active: The first day of the month, 00:00:00, is configured as the day and time.</i> |
| End of the month | <i>Active: The first day of the following month, 00:00:00, is configured as the day and time.</i> |

4.8.4.3day

Selection of a day in a month for display in the report.

SELECTION OF DAY



| Option | Description |
|-----------------------------|---|
| Header | <p>It is possible to change to other months in the header by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous month. ▶ Arrow right: Switches to the following month. ▶ Year: Opens the dialog to select a month (on page 26). |
| Selection of day | <p>The selected day is displayed in bold. If there is no value, the current day is displayed in bold.</p> <p>Clicking on a day accepts the day as a time point and closes the dialog. The time is defined using the two control elements Beginning of the month and End of the month.</p> |
| Beginning of the day | <i>Active: 00:00:00</i> is configured as a time. |
| End of the day | <i>Active: 00:00:00</i> of the following day is configured as a time. |

4.8.4.4Hours

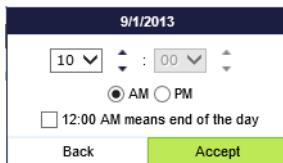
Selection of a day and an hour in a month for display in the report.

SELECTION OF DAY

| September 2014 | | | | | | | |
|-----------------------------------|----|----|----|----|----|----|----|
| WK | MO | TU | WE | TH | FR | SA | SU |
| 36 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 37 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 38 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 39 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 40 | 29 | 30 | 1 | 2 | 3 | 4 | 5 |
| Today: 9/1/2014 | | | | | | | |
| Beginning of this week: 9/1/2014 | | | | | | | |
| End of this week: 9/7/2014 | | | | | | | |
| Beginning of this month: 9/1/2014 | | | | | | | |
| End of this month: 9/30/2014 | | | | | | | |

| Option | Description |
|--------------------------------|---|
| Header | <p>It is possible to change to other months in the header by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous month. ▶ Arrow right: Switches to the following month. ▶ Year: Opens the dialog to select a month (on page 26). The header can be used for date navigation: |
| Selection of day | <p>The selected day is displayed in bold. If there is no value, the current day is displayed in bold.</p> <p>Clicking on a day accepts the day as a time point and opens the dialog to select an hour.</p> |
| Today | Accepts the current day as a date and opens the dialog to select the hour. |
| Beginning of this week | Sets Monday of the current calendar week with the start of the day (00:00:00) as the time. |
| End of this week | Sets Monday of the following calendar week with the start of the day (00:00:00) as the time. |
| Beginning of this month | Sets the first day of the current month with the start of the day (00:00:00) as the time. |
| End of this month | Sets the first day of the following month with the start of the day (00:00:00) as the time. |

SELECTION OF HOUR

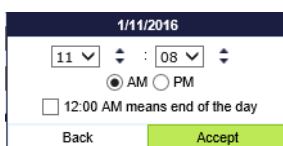


| Parameter | Description |
|--------------------------------|---|
| Header | A click on the header opens the month view to navigate dates. |
| Entry of time | <p>The time is selected by means the drop-down list.</p> <p>The selection is made by clicking on the arrow of the spin control or by clicking on the desired time in the drop-down list that has been opened or by direct input using the keyboard (arrow and number keys).</p> <p>Minutes are displayed as 00 and cannot be changed.</p> |
| 00:00 means the end of the day | <i>Active:</i> 00:00 is interpreted as the end of the day. |
| Back | Opens month view for navigation of dates. |
| Accept | <p>Applies settings and closes the dialog.</p> <p>To cancel the input, click on the calendar symbol next to the input field.</p> |

4.8.4.5 Time

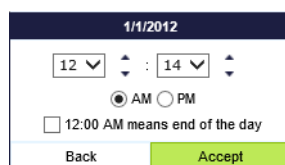
The time is selected according to the setting of the language of the browser (on page 17) in 24-hour time or in 12-hour time.

24-HOUR TIME FORMAT



| Option | Description |
|---------------------------------------|--|
| Header | A click on the header opens the month view to navigate dates. |
| Entry of time | <p>The time is selected by means of two drop-down lists. Clicking on the list opens these. The selection is made by clicking on the arrow of the spin control or by clicking on the desired time in the drop-down list that has been opened or by direct input using the keyboard (arrow and number keys):</p> <p>The first (left) drop-down list is for selecting the hour.</p> <p>The arrow on the right next to the first drop-down list increases and reduces the set hour by the value 1. At the end of the list, it goes to the start if it is increased. At the start of the list, it goes to the end if it is reduced.</p> <p>The second (right) drop-down list is for selecting the minute. The list contains the values 0 to 59. If the drop-down list is opened, a value can also be selected via the keyboard (arrow and number keys).</p> |
| 00:00 means the end of the day | <i>Active:</i> 00:00 is interpreted as the end of the day. |
| Back | Opens month view for navigation of dates. |
| Accept | <p>Applies settings and closes the dialog.</p> <p>To cancel the input, click on the calendar symbol next to the input field.</p> |

12-HOUR TIME FORMAT

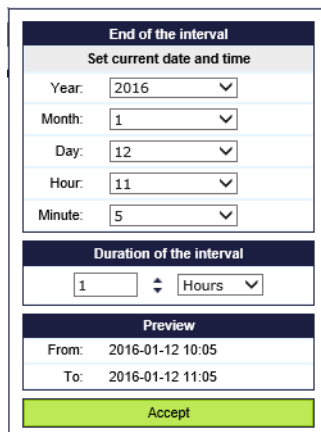


| Parameter | Description |
|---------------|---|
| Header | A click on the header opens the month view to navigate dates. |

| Parameter | Description |
|--------------------------------------|--|
| Entry of time | <p>The time is selected by means of two drop-down lists. Clicking on the list opens these. The selection is made by clicking on the arrow of the spin control or by clicking on the desired time in the drop-down list that has been opened or by direct input using the keyboard (arrow and number keys):</p> <p>The first (left) drop-down list is for selecting the hour.</p> <p>The arrow on the right next to the first drop-down list increases and reduces the set hour by the value 1. At the end of the list, it goes to the start if it is increased. At the start of the list, it goes to the end if it is reduced.</p> <p>The second (right) drop-down list is for selecting the minute. The list contains the values 0 to 59. If the drop-down list is opened, a value can also be selected via the keyboard (arrow and number keys).</p> <p>AM: Morning (ante meridiem)</p> <p>PM: Afternoon (post meridiem)</p> |
| 12:00 AM means end of the day | <i>Active:</i> 12:00 AM is interpreted as the end of the day. |
| Back | Opens month view for navigation of dates. |
| Accept | <p>Applies settings and closes the dialog.</p> <p>To cancel the input, click on the calendar symbol next to the input field.</p> |

4.8.5 Time span

This dialog makes it possible to enter a time period, depending on the configuration of the report.



| End of the interval | |
|---------------------------|------------------|
| Set current date and time | |
| Year: | 2016 |
| Month: | 1 |
| Day: | 12 |
| Hour: | 11 |
| Minute: | 5 |
| Duration of the interval | |
| 1 | Hours |
| Preview | |
| From: | 2016-01-12 10:05 |
| To: | 2016-01-12 11:05 |
| Accept | |

To configure a time period:

1. Select the end time
The possibilities for selection available depend on the report:
Year (on page 33)
Month (on page 34)
day (on page 35)
Hour (on page 37)
Minute (on page 38)
2. Select the interval duration.
The interval duration defines the time period until the end time. The possibilities for selection depend on the report.
3. The selected configuration is displayed in the Preview area. Error messages are displayed here if there is an incorrect configuration.

4.8.5.1 Year

ENTRY OF THE TIME RANGE IN YEARS.

End of the interval

Set current date and time

Year:

☒ Beginning of the year
☐ End of the year

Duration of the interval

Preview

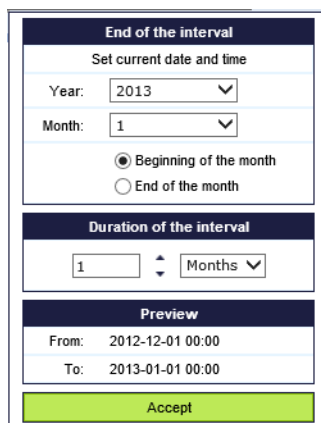
From: 2012-01-01 00:00
To: 2013-01-01 00:00

| Option | Description |
|----------------------------------|---|
| End of the interval | <p>Definition of the end time.</p> <p>Minutes and hours are always set to 0, days are always set to 1. January. These elements cannot be configured.</p> |
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Select from drop-down list. |
| Beginning of the year | <i>Active:</i> The end time is 00:00 on January 1 of the selected year. |
| End of the year | <i>Active:</i> The end time is 00:00 on January 1 of the following year. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <p>Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows.</p> <p>Drop-down list: Defines granularity. Fixed setting: <i>Years</i></p> |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <p>From: Start of the interval. Display only.</p> <p>To: End of the interval. Display only.</p> |

| Option | Description |
|--------|--|
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

4.8.5.2 Month

ENTRY OF THE TIME RANGE IN MONTHS.



| Option | Description |
|---------------------------|---|
| End of the interval | <p>Definition of the end time.</p> <p>Minutes and hours are always set to 0, days are always set to 1. These elements cannot be configured.</p> |
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Select from drop-down list. |
| Month | Input of month. Select from drop-down list. |
| Beginning of the month | <i>Active:</i> The end time is 00:00 on the first day of the selected month. |
| End of the month | <i>Active:</i> The end time is 00:00 on the first day of the following month. |
| Duration of the interval | Duration of the period of time that is to be analyzed. |

| Option | Description |
|----------------|--|
| | <p>Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows.</p> <p>Drop-down list: Defines granularity. Selection of years or months.</p> |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <p>From: Start of the interval. Display only.</p> <p>To: End of the interval. Display only.</p> |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

4.8.5.3 Day

ENTRY OF THE TIME RANGE IN DAYS.

| End of the interval | |
|---|------------------|
| Set current date and time | |
| Year: | 2013 ▼ |
| Month: | 1 ▼ |
| Day: | 1 ▼ |
| <input checked="" type="radio"/> Beginning of the day <input type="radio"/> End of the day | |
| Duration of the interval | |
| 1 | Months ▼ |
| Preview | |
| From: | 2012-12-01 00:00 |
| To: | 2013-01-01 00:00 |
| Accept | |

| Option | Description |
|----------------------------------|---|
| End of the interval | <p>Definition of the end time.</p> <p>Minutes and hours are always set to 0 and cannot be configured.</p> |
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Select from drop-down list. |
| Month | Input of month. Select from drop-down list. |
| Day | Input of day. Select from drop-down list. |
| Beginning of the day | <i>Active:</i> The end time is 00:00 on the selected day. |
| End of the day | <i>Active:</i> The end time is 00:00 on the selected day of the following day. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <p>Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows.</p> <p>Drop-down list: Defines granularity. Selection between years, months and days.</p> |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <p>From: Start of the interval. Display only.</p> <p>To: End of the interval. Display only.</p> |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

4.8.5.4 Hour

ENTRY OF THE TIME RANGE IN HOURS.

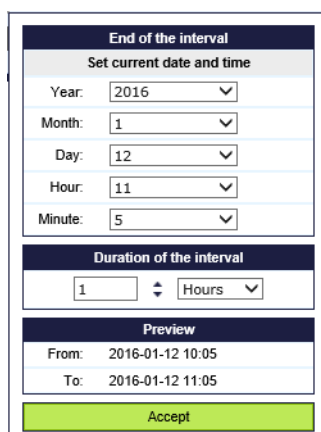
| End of the interval | |
|---------------------------|------------------|
| Set current date and time | |
| Year: | 2013 ▼ |
| Month: | 1 ▼ |
| Day: | 1 ▼ |
| Hour: | 0 ▼ |
| Duration of the interval | |
| 1 | Months ▼ |
| Preview | |
| From: | 2012-12-01 00:00 |
| To: | 2013-01-01 00:00 |
| Accept | |

| Option | Description |
|----------------------------------|---|
| End of the interval | Definition of the end time. Minutes are always set to 0 and cannot be configured. |
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Select from drop-down list. |
| Month | Input of month. Select from drop-down list. |
| Day | Input of day. Select from drop-down list. |
| Hour | Input of hour. Select from drop-down list. |
| Duration of the interval | Duration of the period of time that is to be analyzed. Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows. Drop-down list: Defines granularity. Selection between years, months, days and hours. |
| Preview | Display of the current configuration settings in local time. Errors are displayed by the corresponding error messages. From: Start of the interval. Display only. To: End of the interval. Display only. |

| Option | Description |
|--------|--|
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

4.8.5.5 Minute

ENTRY OF THE TIME RANGE IN MINUTES.



| Option | Description |
|---------------------------|---|
| End of the interval | Definition of the end time. |
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Select from drop-down list. |
| Month | Input of month. Select from drop-down list. |
| Day | Input of day. Select from drop-down list. |
| Hour | Input of hour. Select from drop-down list. |
| Minute | Input of minute. Select from drop-down list. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <p>Text input field: Defines quantity. Input of a number between 1 and 99999.</p> |

| Option | Description |
|----------------|--|
| | <p>The quantity can be increased or reduced with the arrows.</p> <p>Drop-down list: Defines granularity. Selection between years, months, days, hours and minutes.</p> |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <p>From: Start of the interval. Display only.</p> <p>To: End of the interval. Display only.</p> |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

4.8.6 Equipment group

Equipment groups can be displayed with a different depth of the level displayed when opening the drop-down list. The following are available:

- ▶ Only the upper-most level
- ▶ All levels
- ▶ A defined depth of levels (up to 25)

This output display is configured using the report designer in Reporting Studio. This control element is available for all report templates that contain equipment models.

Attention

Each equipment group in zenon may only be assigned to one individual time model.

If several time model groups are assigned, the Report Engine Export wizard uses the first that it finds and exports this to the metadata of Report Engine. Other time model groups are ignored.

LABELS

Labels for an equipment group do not need to be unique. Values from equipment groups with the same labels are permitted if they are not in the same area of the tree. Identical labels for root elements and identical labels for elements with the same superordinate nodes leads to errors.

SELECTION OF AN ENTRY FROM THE EQUIPMENT MODEL

This selection dialog makes it possible to select an entry from the equipment model. The entries are displayed via a tree structure and sorted alphabetically in each level.

Subordinate elements of a level can be hidden. A plus in front of the entry means that: the element contains additional subordinate elements. They are not displayed in the current view. Click on the plus sign to open the display of the sub elements. The plus sign changes to a minus sign. Click on the minus sign to close the level again.

To select an element:

1. Open the respective group if the element is a sub element and therefore is not displayed.
2. Select the desired element with a mouse click.
3. Close the dialog by clicking in the area next to the dialog.

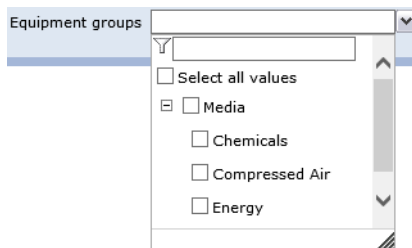
The dialog can be displayed filtered (on page 43). At this the filter criterion is only used on entries which do not have any subordinate elements.

SELECTION OF SEVERAL ENTRIES FROM THE EQUIPMENT MODEL

This selection dialog makes it possible to select several entries from the equipment model. The entries are displayed via a tree structure and sorted alphabetically in each level.

Subordinate elements of a level can be hidden. A plus in front of the entry means that: the element contains additional subordinate elements. They are not displayed in the current view. Click on the plus sign in order to open the display of the sub elements. The plus sign changes to a minus sign. Click on the minus sign in order to close the level.

At showing/hiding selected entries (tick in the check box) are also shown/hidden. The state (selected or deselected) remains the same. Double clicking a checkbox marks all hierarchically-subordinate checkboxes that are visible at that time or removes the marking.



To select several elements:

1. Highlight the desired object by clicking on the checkbox in front of the element.
2. Open the respective group if the element is a sub element and therefore is not displayed.
3. If the selected element has sub-levels, the levels below are also selected with the control element.
4. Close the dialog by clicking in the area next to the dialog.

The dialog can be displayed filtered (on page 43). At this the filter criterion is only used on entries which do not have any subordinate elements.

STRUCTURE FOR PREDEFINED VALUES

Pre-defined values require a certain structure for both dialogs:

- ▶ The name to be displayed is always in the labeling of the value.
 - ▶ For root entries (no superordinate node exists) only the **ID** is in the value.
 - ▶ For subordinate entries the value consists of **ID** of the entry and the **ID** of the superordinate entry separated by a linking character (pipe character |).
- Syntax: **[ID of the entry] | [ID of the superordinate entry]**

DOUBLE-CLICK IN THE TREE STRUCTURE

Different browsers react differently to a double-click on a node in the tree structure:

- ▶ Internet Explorer:
The opposite of the currently visible state of the node that has been clicked on is passed on to the lower objects and transferred to the nodes.
For example: The checkbox of the node is not ticked. Double clicking ticks the checkboxes of the node and all its sub-items.
- ▶ Edge, Chrome and Firefox:
The current status does not change and is passed on to the lower objects.

For example: The checkbox of the node is not ticked. Double clicking does not tick the checkboxes of the node and all its sub-items.

4.8.7 Lot and shift

This selection dialog configures the display of lots and shiftdata. Each predefined value corresponds to one line. The user can select a lot by clicking on the respective cell.

The selection dialog contains the following columns:

- ▶ Name (for lot or shift)
- ▶ Start date
- ▶ Start time
- ▶ End date
- ▶ End time
- ▶ Duration

| | | | | | | |
|----------|--|--|--|--|--|--|
| Shift 1 | | | | | | |
| Shift 2 | | | | | | |
| Variable | | | | | | |

The dialog can be sorted and filtered. For details, see the Filter lots (on page 44) chapter.

STRUCTURE OF PREDEFINED VALUES

Predefined values call for a certain structure for this dialog:

- ▶ The lot name is always in the label of the value.
- ▶ The value filed of the label consists of:

[start time]

Linking character "|"

[end time]

The format of a time is **YYYY-MM-DD hh:mm:ss** in UTC.

The time is converted to the local time of the server for display.

From this the following values are generated for displaying in columns:

- ▶ Lot name

- ▶ Date on which the lot started: Input in date format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Time when the lot started: Input in time format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Date on which the lot ended: Input in date format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Time when the lot ended: Input in time format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Lot duration:
Format: **[#Days][Day abbreviation in the culture of the user] [#Hours]:[#Minutes]:[#Seconds]**

EVALUATION OF LOT GROUPS

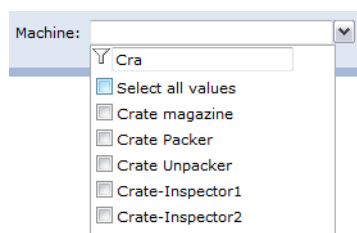
A mechanism for evaluating lot groups is available. This is based on the equipment model:

1. The necessary variables and the lot archive in which they are logged are found via the equipment model.
2. All lots for the selected point in time are obtained from the lot archives. In doing so, lots from several archives with the same lot names but different point in time are compiled into one entry.
3. The lots are displayed in a lot selection dialog via report parameters.
4. When creating a report, the lots for the respective archives are read again and the data for the time period of the lot in the archive is obtained.

4.8.8 Filters

Some dialogs can be displayed in a filtered way. For example dialogs for:

- ▶ Input or selection of several values (on page 22): Filter method see below
- ▶ Equipment group selection (on page 39): Filter method see below
- ▶ Lot selection (on page 42): For the filter method, see Lot selection (on page 44)



To filter the predefined values:

1. Enter the filter criterion in the input field.

2. Press the **Enter** key.
3. The list is rebuild and only contains values which correspond to the filter criterion

To display all values:

1. Delete the filter criterion from the input field.
2. Press the **Enter** key.
3. The list is rebuild and contains all predefined values.

FILTER CRITERIA FOR DIALOGS WHICH CAN BE FILTERED

- ▶ The filtering is not case-sensitive.
- ▶ A question mark (?) is a wildcard for exactly one character.
- ▶ An asterisk (*) is a wildcard for any number of character.
- ▶ If there is neither * nor ? in a filter criterion, a * is appended to the filter criterion internally.
- ▶ If values are selected, they are still displayed when filtering even if they do not match the criterion.
- ▶ Equipment group: The filter criterion is only applied to entries which do not have subordinate elements (e.g. they never existed or they were filtered out previously)

EXAMPLES

| Filters | finds |
|---------------------------|--|
| e or E or e* or E* | finds all entries starting with "e" or "E". |
| *3 | finds all entries ending with "3". |
| ?r* or ?R* | finds all entries with "r" or "R" as second character. |
| *9* | finds all entries containing "9". |

4.8.8.1 Filter lots

The entries in the lot selection dialog (on page 42) can be filtered and sorted.

FILTER VALUES

| String | | | |
|-----------|-------------|------------|----------|
| Batchname | Startdate ▼ | Starttime | Enddate |
| Y F | Y 5/1/2011 | Y | Y |
| Frueh02 | 5/1/2011 | 6:04:22 AM | 5/1/2011 |

To filter the predefined values:

1. In each desired column enter the filter criterion in the input field.
2. Press the **Enter** key.
3. The list is rebuild and only contains values which correspond to the filter criterion

To display all values:

1. Delete the filter criterion from the input field.
2. Press the **Enter** key.
3. The list is rebuild and contains all predefined values.

For the filtering the following is true:

- ▶ Each column has its own filter box.
- ▶ If a filter box is empty, it is not filtered after this column.
- ▶ For an entry to be displayed, it must fulfill the filter criteria of all columns.
- ▶ The filtering is triggered by pressing the **Enter** key in any filter box.
- ▶ The following filters are used for the individual columns:

The lot name uses the text filter (on page 43) in the same way as the dialog for selecting one of several predefined values.

Start date uses the date filter.

Start time uses the time filter.

End date uses the date filter.

End time uses the time filter.

Duration uses the duration filter.

LOT NAME

String

| Batchname | Startdate ▼ | Starttime | Enddate |
|-----------|-------------|-----------|------------|
| F* | | | |
| Frueh01 | 30.04.2011 | 06:00:00 | 30.04.2011 |
| Frueh02 | 01.05.2011 | 06:04:22 | 01.05.2011 |

For this filter the following is true:

- ▶ The filtering is not case-sensitive.
- ▶ A question mark (?) is a wildcard for exactly one character.
- ▶ An asterisk (*) is a wildcard for any number of character.
- ▶ If there is neither * nor ? in a filter criterion, a * is appended to the filter criterion internally.
- ▶ If values are selected, they are still displayed when filtering even if they do not match the criterion.

DATE FILTER

String

| Batchname | Startdate ▼ | Starttime | Enddate |
|--------------|-------------|-------------|----------|
| | 5/1/2011 | | |
| Frueh02 | 5/1/2011 | 6:04:22 AM | 5/1/2011 |
| Nachmittag02 | 5/1/2011 | 2:03:47 PM | 5/1/2011 |
| Spaet02 | 5/1/2011 | 10:00:00 PM | 5/2/2011 |

For this filter the following is true:

- ▶ The date must be entered in the date format of the language culture of the user.
- ▶ Leading zeros can be left out.
- ▶ For single elements (day, month, year) you may use * as wildcard.

For example:

May 2011: *.5.2011

Year 2011: *.*.2011

- ▶ To filter from/up to a special day you may use the following at the beginning:

<

>

<=

>=

* is not allowed.

For example:

from 1 May 2011: > **30.4.2011** or >= **1.5.2011**

up to 31 May 2011: < **1.6.2011** or <= **31.5.2011**

- ▶ If a filter criterion does not match these conditions (e.g. < and * are combined, elements are missing or are entered in the wrong date format), the whole filtering process is canceled.

TIME FILTER:

| String | | | |
|-----------|------------|-----------|------------|
| Batchname | Startdate | Starttime | Enddate |
| Frueh01 | 30.04.2011 | 06:00:00 | 30.04.2011 |
| Frueh02 | 01.05.2011 | 06:04:22 | 01.05.2011 |

For this filter the following is true:

- ▶ The time must be entered in the time format of the language culture of the user.
- ▶ Leading zeros can be left out.
- ▶ For single elements (hours, minutes, seconds) you may use * as wildcard.

For example:

12 o' clock: **12:*:*** (24-hours) or **12:*: PM** (12-hours)

13:45: **13:45:*** (24-hours) or **1:45: PM** (12-hours)

- ▶ To filter from/up to a special time you may use the following at the beginning:

<

>

<=

>=

* is not allowed.

For example:

Morning including noon: < **12:00:01** or <= **12:00:00** (24-hours) or < **12:00:01 PM** or <= **12:00:00 PM** (12-hours)

Everything starting at 8 o' clock: > **7:59:59** or >= **8:0:0** (24-hours) or > **7:59:59 AM** or >= **8:0:0 AM** (12-hours)

- ▶ If a filter criterion does not match these conditions (e.g. < and * are combined, elements are missing or are entered in the wrong time format), the whole filtering process is canceled.

DURATION FILTER

String

| me | Enddate | Endtime | Duration |
|----|------------|----------|-------------|
| 3 | 03.05.2011 | 08:44:56 | 1d 02:45:23 |
| 6 | 04.05.2011 | 11:34:23 | 1d 02:49:27 |

For this filter the following is true:

- ▶ The duration must be entered in the format defined above.
- ▶ Leading zeros can be left out.
- ▶ For single elements (hours, minutes, seconds) you may use * as wildcard.
For example:
Duration: 1 day: **1d *:*:***
- ▶ To filter from/up to a certain duration you may use the following at the beginning:
 - <
 - >
 - <=
 - >=
 * is not allowed.
For example:
 Longer than 1 day: > **1d 0:0:0** or >= **1d 0:0:1**
 Less than 12 hours: < **0d 12:0:0** or <= **0d 11:59:59**
- ▶ If a filter criterion does not match these conditions (e.g. < and * combined, elements missing), the whole filtering process is canceled.

SORT VALUES

The report can be sorted ascending or descending on any column. The current sorting order is displayed in the column after which it is sorted.

To sort a column:

1. click on the desired column title
2. the sorting is started
3. the arrow next to the column header displays whether the sorting is ascending or descending
4. another click on the column header changes the sorting order

Filtering and sorting can be used in parallel and do not influence one another.

4.8.9 Sorting of filter elements

Selection of a value from predefined values or *Selection of several values from predefined values* type elements have a predefined sorting for the display of filter elements per default.

This applies if the parameter:

- ▶ is one of the following data types:
 - Integer*
 - Float*
 - Date & time*
 - text*
- ▶ Has a list of predefined values
- ▶ Is not hidden and not write-protected

The default sorting is defined when the report template is created and cannot be changed by report developers in the Report Builder.

The following sorting is available:

| Sorting | Description |
|-----------------------------|--|
| <i>A-Z:</i> | Sorting is in alphabetical order according to the display text of the predefined values. That is the default action. This also applies if no special sorting has been saved. |
| <i>Z-A:</i> | Sorting is in reverse alphabetical order according to the display text of the predefined values. |
| <i>Values upwards:</i> | Sorting direction is upwards according to the predefined values. The data type of the parameter is not taken into account in the process. |
| <i>Values downwards:</i> | Sorting direction is downwards according to the predefined values. The data type of the parameter is not taken into account in the process. |
| <i>In sequence:</i> | The values are written to the list in the order in which they were provided by the SQL Server Reporting Services web service. |
| <i>In reverse sequence:</i> | The values are written to the list in the reverse order to the order in which they were provided by the SQL Server Reporting Services web service. |

4.9 Site Settings

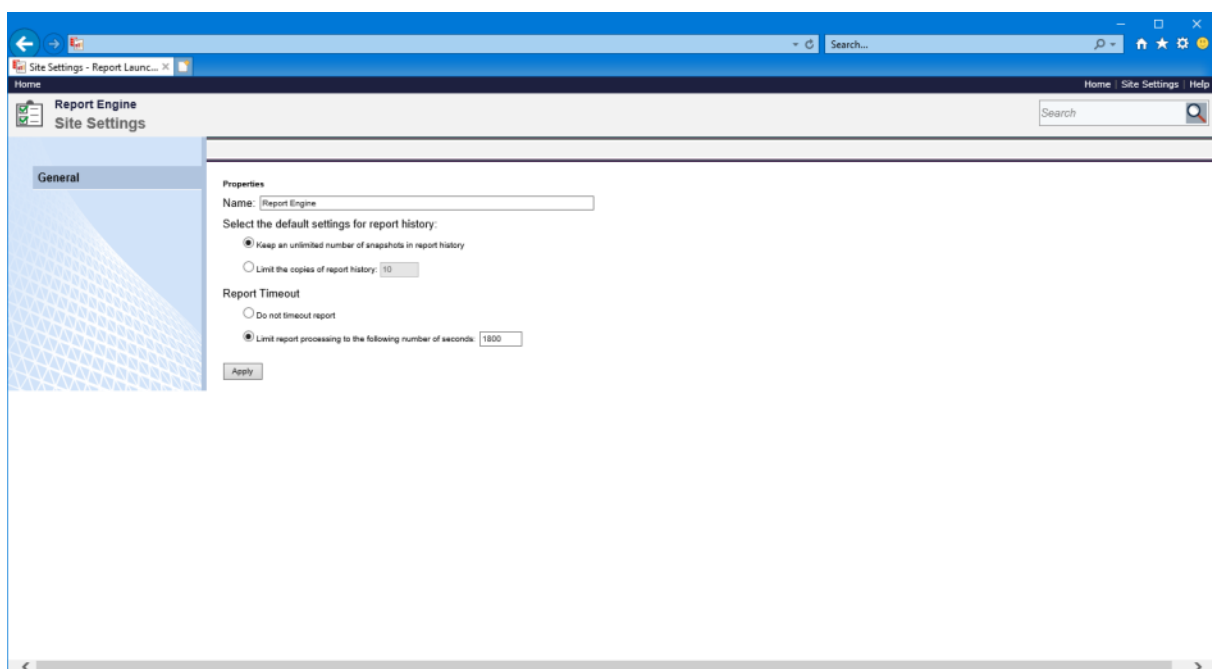
Via the site settings you configure

- ▶ General properties (on page 50) of Report Engine

Note: User rights are set and administered in Reporting Studio.

4.9.1 General

General settings for naming Report Engine and processing the reports.



| Property | Description |
|--|--|
| Name | Name which is displayed in the header of the report generators. |
| Default settings for the report history | <p>Defined number of reports saved for the history. Possible settings:</p> <p>Keep an unlimited number of snapshots in report history: Saves as many snapshots as desired. Number is limited by memory space.</p> <p>Max. number of copies of the report history: Entry of the number in the field. Default:10</p> |
| Report timeout | Defines timeout for processing reports. Possible settings: |

| Property | Description |
|--------------|--|
| | Do not timeout report Limit processing of the report to the following number of seconds: Entry of seconds in the field. Default: 1800 |
| Apply | Takes over changed settings Attention: If you leave the site without clicking Apply , all changes will be lost. |

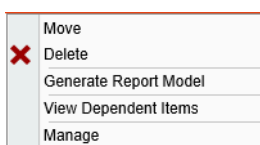
4.10 Data Source

To edit a data source:

1. Highlight the data source.
2. Click on the arrow.
3. Select the desired command from the context menu.

DATABASE CONTEXT MENU

The context menu of databases contains commands for their administration. The context menu is identical for both views of the Report Launcher.



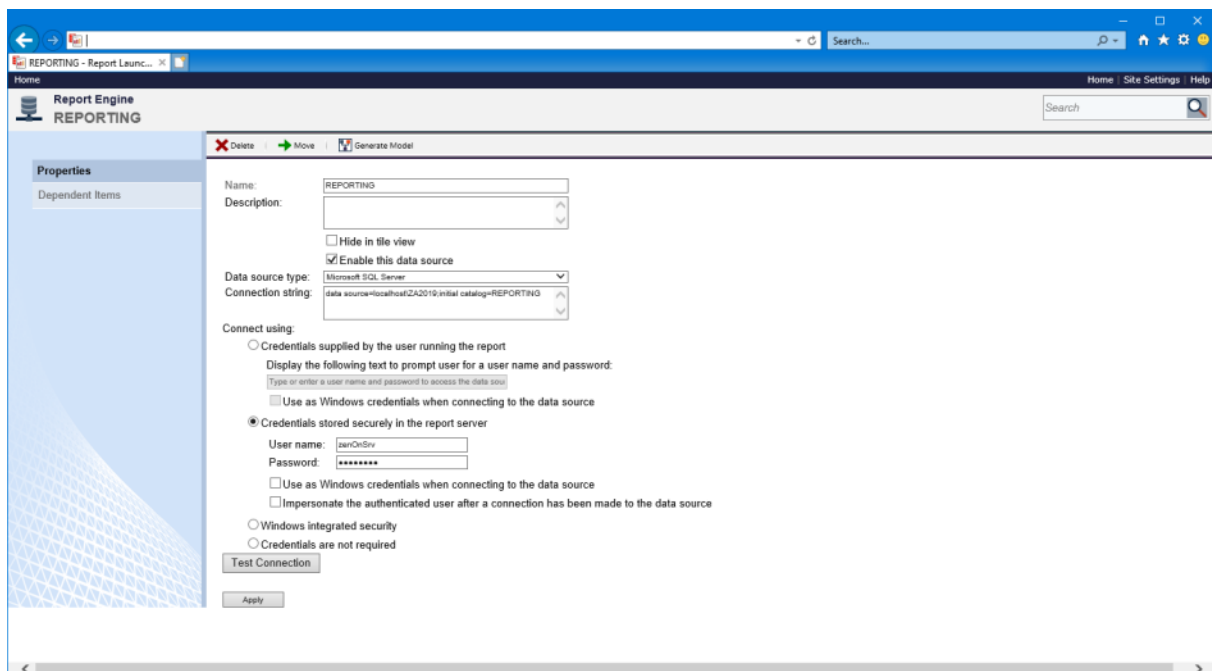
| Option | Description |
|------------------------------|--|
| Move | Opens menu for selecting the new saving location. |
| Delete | Deletes selected reports. |
| Generate Report Model | Opens the dialog (on page 54) to generate a new model for the data source. |
| View Dependent Items | Displays all reports based in this data source and makes it possible to delete or move them. |
| Manage | Opens the dialog (on page 52) to administer the database. |

You can find detailed instructions for the configuration of Microsoft Reporting Services on the Microsoft homepage:

- ▶ German (<http://msdn.microsoft.com/de-de/library/ms159106.aspx>)
- ▶ English (<http://msdn.microsoft.com/en-us/library/ms159106.aspx>)
- ▶ French (<http://msdn.microsoft.com/fr-fr/library/ms159106.aspx>)
- ▶ Italian (<http://msdn.microsoft.com/it-it/library/ms159106.aspx>)

4.10.1 Properties

In window properties you define the basic properties of the data source and the connection parameters.



| Option | Description |
|----------------|--|
| Delete | Deletes data source. |
| Move | Moves data source. |
| Generate Model | Opens dialog for creating a new model. |
| Name | Name of the data source. |
| Description | Optional, detailed description |

| Option | Description |
|--|---|
| Hide in side-by-side/one-below-the-other view | <i>Active:</i> is hidden in side-by-side/one-below-the-other view . |
| Enable this data source | <i>Active:</i> Data source is used. |
| Data source type | Selection of the type via drop-down list. |
| Connection string | String for establishing the connection. |
| Establish connection via | Selection of the connection method. |
| Provided login information of the user who executes the report | User must state information. It is possible to display an instruction The information can be marked as Window login information. |
| Login information which are saved securely on the report server | Login information is saved on the server. User name and password must be entered. The following are available as an option: Use of Windows authentication when connecting to the data source. Assumption of the identity of the user entered after establishing a connection. |
| Integrated Windows security | Windows security. |
| No login information required | No login information is necessary. |
| Test Connection | Checks connection and displays a success/failure message below the button. |
| Apply | Applies all settings. |

CHANGE PASSWORD

It can happen that the password for the data source can no longer be changed.

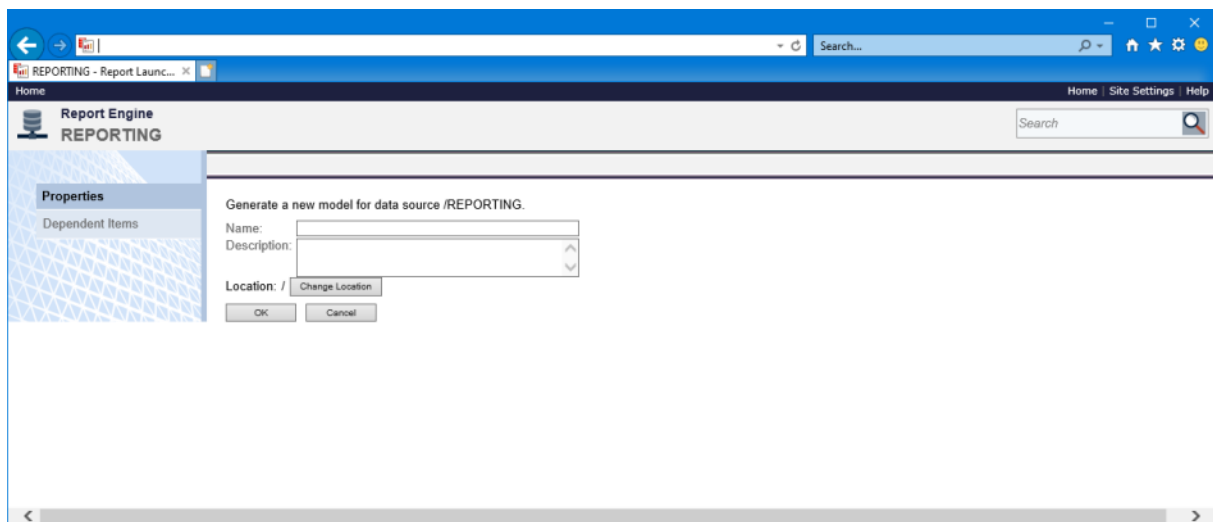
Procedure to allow access to the **Password** option again:

1. In the **A user-defined data source** section, activate the **No login information required** property.
2. Click on **test connection**.

The **User name** and **Password** properties can now be changed.

4.10.1.1 Generate Report Model

This dialog makes it possible to create new models for the data source.



| Option | Description |
|---|--|
| Name | Name of the new data source. |
| Description | Optional, detailed description. |
| Saving location/change saving location | Opens dialog for defining the saving location. |
| OK | Confirms changes and opens the properties. |
| Cancel | Discards all changes and closes the dialog. |

4.11 Folder

Reports are collected and grouped in folders.

Folders are configured and managed via:

- ▶ menu item **New folder** in the toolbar
- ▶ menu item **Folder settings** in the toolbar
- ▶ the drop-down list of the folder (is displayed at mouse over)

CONTEXT MENU FOLDER

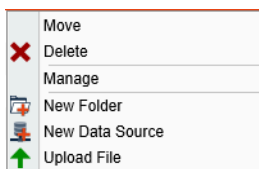
The context menu of folders contains different commands, regardless of the Report Launcher view.

TILE VIEW



| Command | Description |
|---------------|--|
| Move | Opens dialog (on page 16) for selecting the new saving location. |
| Delete | Deletes selected folder. |
| Manage | Opens the dialog for managing (on page 57) the folder. |

DETAILS VIEW



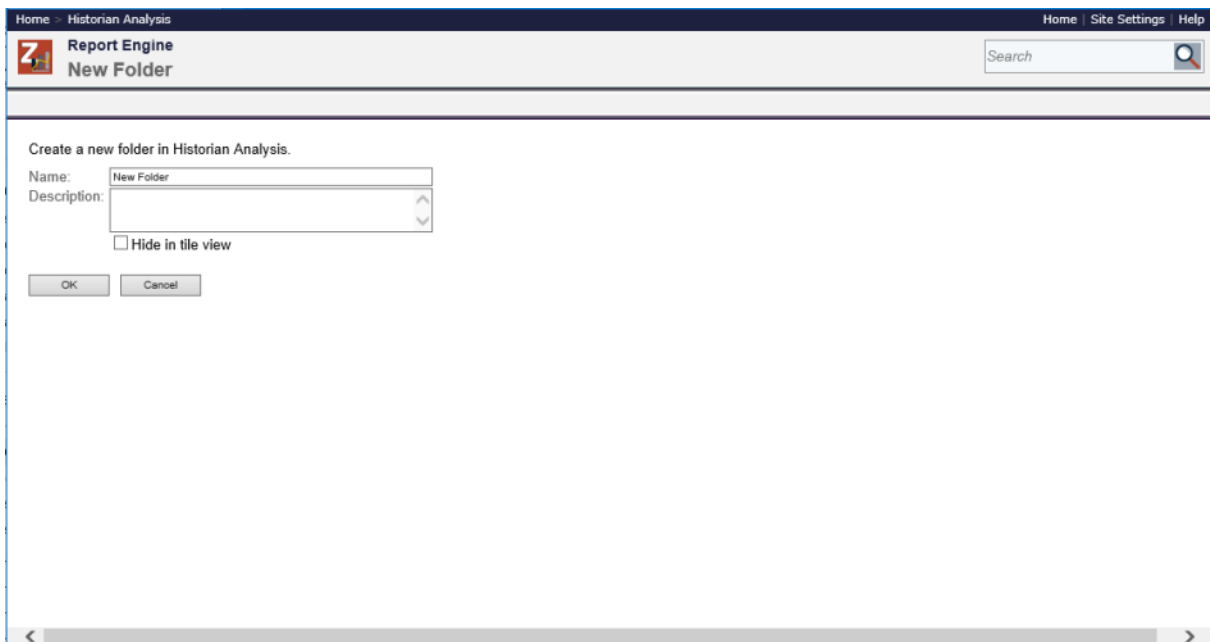
| Command | Description |
|------------------------|--|
| Move | Opens dialog (on page 16) for selecting the new saving location. |
| Delete | Deletes selected folder. |
| Manage | Opens the dialog for managing (on page 57) the folder. |
| New folder | Opens dialog to create a new folder. |
| New Data Source | Opens the dialog (on page 52) to select a new data source. |
| Upload file | Opens the dialog (on page 57) for uploading a new file. |

CREATE NEW FOLDER

To create a new folder:

1. click on menu item **New folder** in the toolbar

- the dialog for creating a new folder is opened

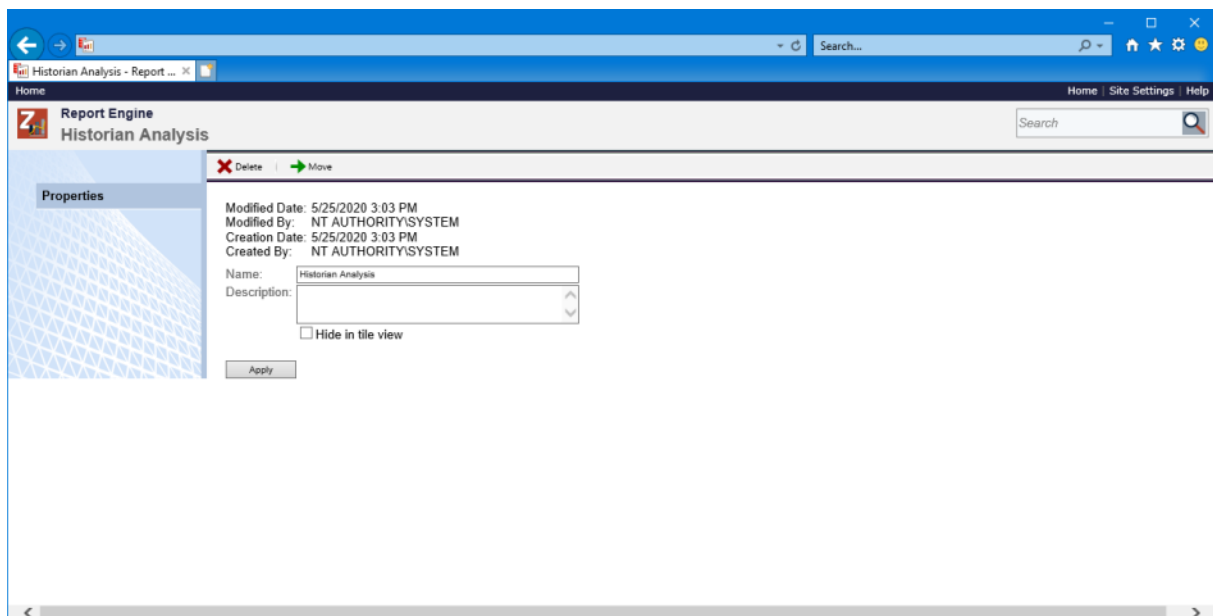


| Option | Description |
|----------------------------|---|
| Name | <p>Name of the folder</p> <p>Rules:</p> <ul style="list-style-type: none"> Must not be empty. Must not consist of periods or spaces Must not contain non-permitted characters; The following are not permitted: ;?:@&=+\$,* < > " / <p>Maximum length: 126 characters</p> |
| Description | Optional description of the folder content. |
| Hide in symbol view | <p><i>Active:</i> Folder is not displayed in the symbol view.</p> <p>This setting can later be changed via menu item Management (on page 54) in the drop-down list of the folder.</p> |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

4.11.1 Properties

The folder properties display information about the folder and offer the possibility to:

- ▶ move
- ▶ delete
- ▶ rename
- ▶ Show or hide in the symbol view



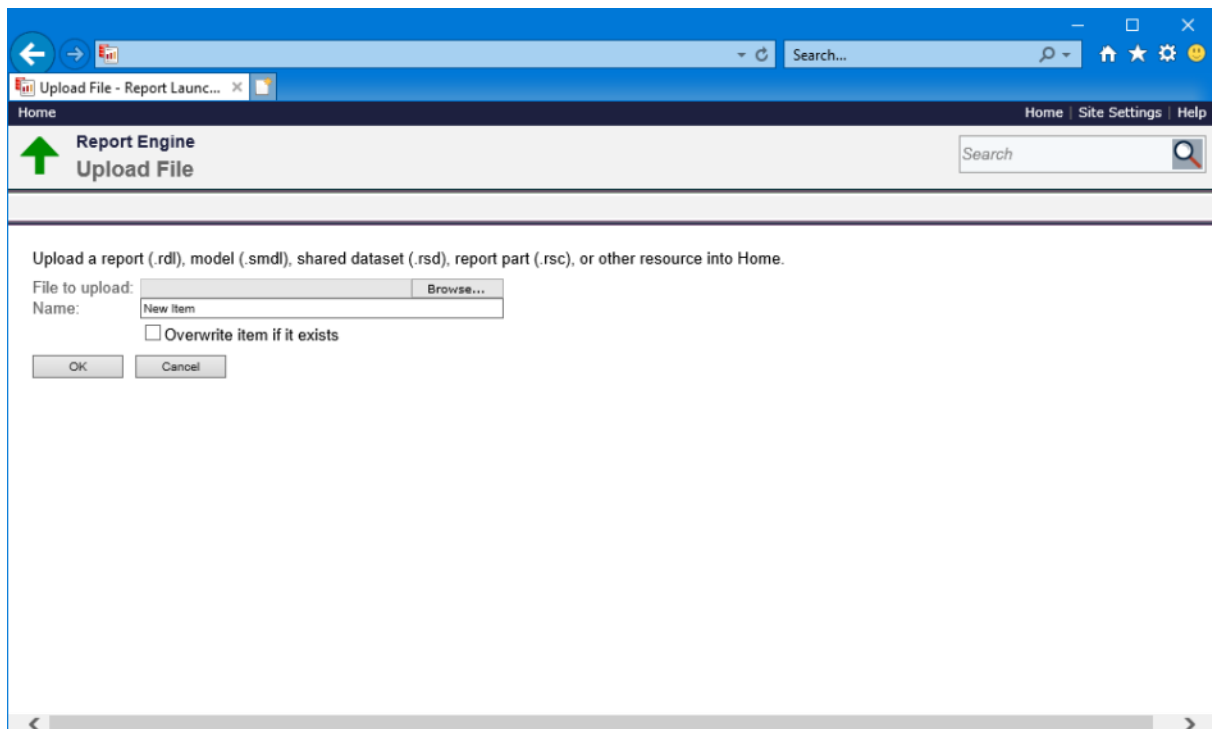
4.12 Upload file

Reports, models and other resources which are edited offline can be uploaded to the Report Server.

To upload resources:

1. In the toolbar click on icon **Upload file**.
The dialog for uploading will be opened.
2. Select the desired file.
3. Select the desired options.

4. Confirm your selection by clicking **OK**.



| Property | Description |
|-----------------------------------|--|
| File to be uploaded | Selection of the file which is to be uploaded. Click on button Browse to open the file manager. Multi-select is not possible. |
| Name | Freely definable name. The file name of the selected file is taken over as default value. |
| Overwrite existing element | <i>Active:</i> If an element with the same name already exists at the Report Server, it is overwritten. |
| OK | Information is applied, the file is uploaded and the dialog is closed. |
| Cancel | Discards all changes and closes the dialog. |

5 Create report

Reports can be created with:

- Reporting Studio

- ▶ Microsoft Report Builder (on page 59) 3.0

For zenon an own wizard for exporting the meta data from the global project and the variables from the local projects is available. For more information about this wizard, see also the Report Engine Export Wizard chapter in the Data abstraction and data inclusion section.

5.1 Report Builder

Reports can be created manually with the help of the Microsoft Report Builder.

Note: If there is not yet a Report Builder present on your system, you can download this in Report Launcher using a button.



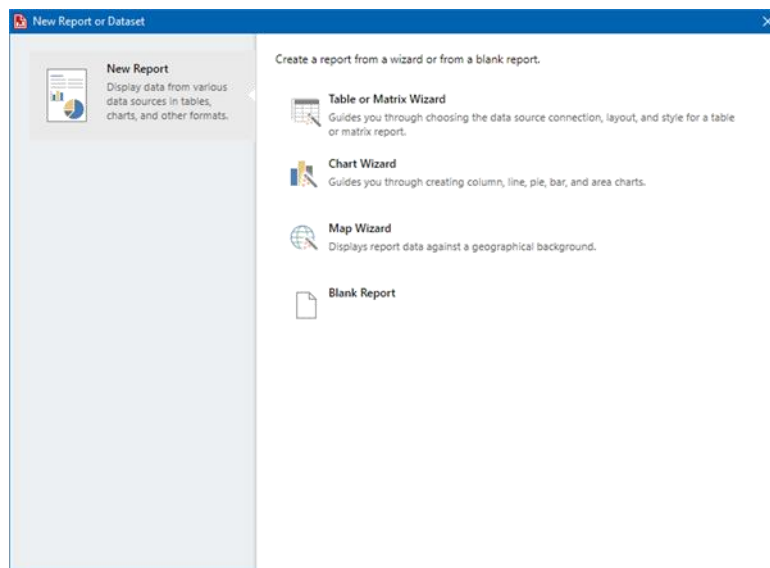
Information

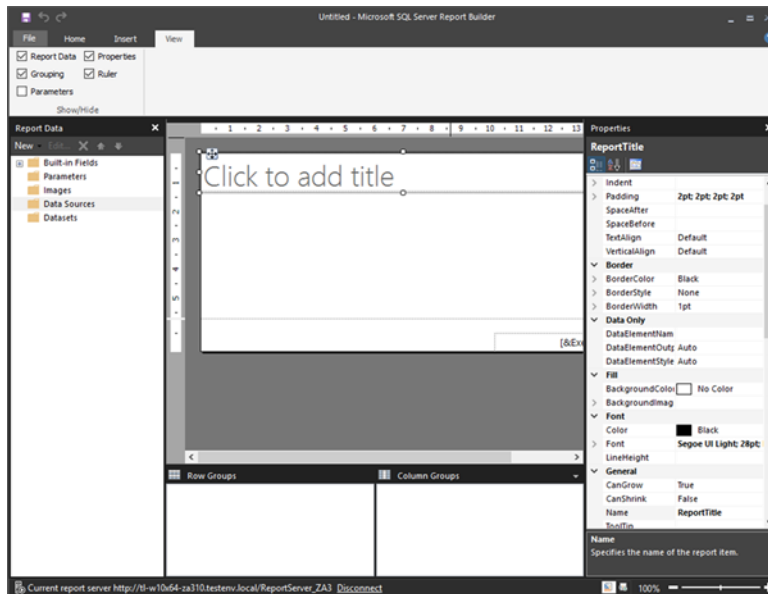
The Report Builder is not suitable as an editor for reports with CRI (Gantt Chart) as it cannot process CRIs.

To start the Microsoft Report Builder:

1. In the menu bar, click on the **Report Builder** button.
Note: This button is not available for Chrome or Firefox.

Depending on the settings, the **Getting Started** or **Report Builder** dialog can be opened directly:





You can get support for the creation of reports with the Report Builder using the integrated help for the Report Builder.

You can find detailed instructions for the configuration of Microsoft Reporting Services on the Microsoft homepage:

- ▶ German (<http://msdn.microsoft.com/de-de/library/ms159106.aspx>)
- ▶ English (<http://msdn.microsoft.com/en-us/library/ms159106.aspx>)
- ▶ French (<http://msdn.microsoft.com/fr-fr/library/ms159106.aspx>)
- ▶ Italian (<http://msdn.microsoft.com/it-it/library/ms159106.aspx>)

Recommendation: Create reports in Reporting Studio on the basis of report templates provided.

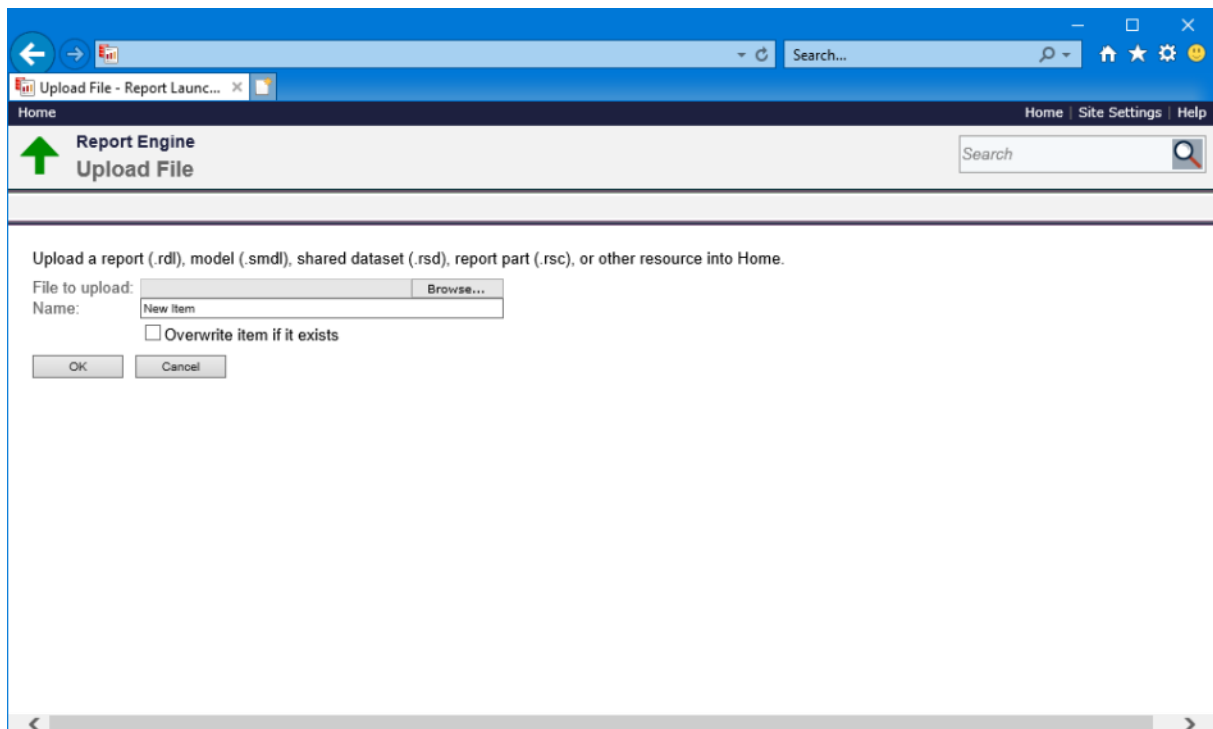
5.2 Upload reports

Reports that were created offline can be uploaded to the Server with the help of Report Engine.

To upload resources:

1. In the toolbar click on icon **Upload file**.
The dialog for uploading will be opened.
2. Select the desired file.
3. Select the desired options.

4. Confirm your selection by clicking **OK**.



| Property | Description |
|-----------------------------------|--|
| File to be uploaded | Selection of the file which is to be uploaded. Click on button Browse to open the file manager. Multi-select is not possible. |
| Name | Freely definable name. The file name of the selected file is taken over as default value. |
| Overwrite existing element | <i>Active:</i> If an element with the same name already exists at the Report Server, it is overwritten. |
| OK | Information is applied, the file is uploaded and the dialog is closed. |
| Cancel | Discards all changes and closes the dialog. |

6 Call up report

Reports can be called up and configured in the browser on the client computer.



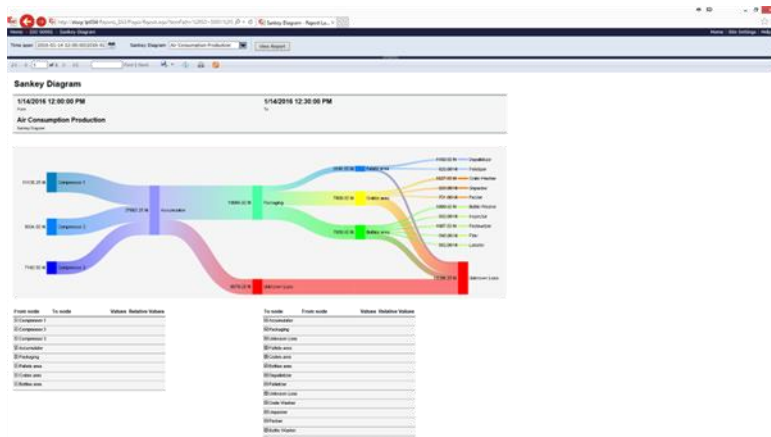
Information

The timeout for the execution of reports in the web browser is 30 minutes. If a report needs longer than 30 minutes to be completed and displayed, the web browser cancels the display with a timeout error message.

To call up a report:

1. Double-click the folder which contains the report or select **open** in the context menu.
2. Double-click the desired report.

The report is opened in the browser.



NAVIGATION

| Item | Description |
|---------------|--|
| Navigation | Allows navigation from the current element to the main directory. |
| Home | Switches to the main view. |
| Site Settings | Opens the administration (on page 50) of general settings of the site. |
| Help | Opens the online help for Report Launcher. |

CONFIGURATION

| Item | Description |
|------------------|--|
| Control elements | Control elements for configuration of the report. The type of control element depends on the report |

| Item | Description |
|-----------|--|
| | <p>template.</p> <p>Control elements can depend on one another. In this case, they can only be configured if the previous one has been configured correctly.</p> |
| Separator | <p>Separates control elements from the toolbar.</p> <p>Clicking on the separator shows or hides the bar with control elements.</p> |
| Toolbar | <p>Contains symbols (on page 63) for navigation in the report and for further processing of the report.</p> |

DISPLAY REPORT

| Elements | Description |
|----------------------|---|
| Report display field | <p>Shows the report with the elements defined in the template:</p> <ul style="list-style-type: none"> ▶ Name of the report ▶ Configured elements ▶ Graphics ▶ Table |

7 Toolbar Report



| Option | Description |
|----------------------------------|--|
| Navigation arrows and <1 from 1> | <p>Navigation in multi-sided reports:</p> <p> <: to the start</p> <p><: back one page</p> <p>Field: Entry of the page to which a jump is to be made; press the Enter key to execute</p> <p>>: forward one page</p> <p>> : to the last page</p> |

| Option | Description |
|----------------------------|---|
| Search field | Enter a search term. |
| Search | Searches defined term and displays first occurrence. |
| Next | Searches for the next occurrence. |
| Icon disk | Export of the report. Click to open the drop-down list with export formats. Possible formats: <i>XML</i> <i>CSV</i> <i>PDF</i> <i>Web archive</i> <i>Excel</i> <i>TIFF</i> <i>Word</i> |
| Icon rotating arrow | Updates data for report display. |
| Icon printer | Opens dialog for printing the report. |
| Icon book | Export in RSS feed. |

8 Configure and export reports

Different parameters (on page 19) can be selected depending on the report type. For example:

- ▶ Time period for the report: for comparing reports two time periods are provided for configuration
- ▶ Projects whose data is being edited
- ▶ Archives
- ▶ Aggregation
- ▶ Variables
- ▶ Alarm groups
- ▶ Alarm Classes
- ▶ Equipment groups and media

CONFIGURING THE REPORT

To configure to a report:

1. open the report
2. select the desired parameters
3. click on display report

SEPARATOR

In value fields of parameters that allow several values, the following are permitted:

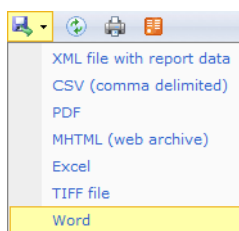
- ▶ Comma
- ▶ Carriage return

EXPORT REPORT

Reports can be exported to different formats.

To export a report:

1. Click on the symbol (on page 63) for the export (disk).
The drop-down list with the export formats is opened.



2. Select the desired format.
3. Save or open the document in the selected format.

EXPORT FORMAT

For the export the following options are available:

| Option | Description |
|--------|---|
| XML | Report is saved as XML file. Click to open the dialog for saving/displaying the XML file. |
| CSV | Report is saved as comma-separated text file (CSV). Click to open the dialog for saving/displaying the CSV file. |

| Option | Description |
|--------------|---|
| <i>PDF</i> | Report is saved as PDF file. Click to open the dialog for saving/displaying the web archive. |
| <i>MHTML</i> | Report is saved as web archive (.mhtml). Click to open the dialog for saving/displaying the web archive. |
| <i>Excel</i> | Report is saved as Excel file (.xls, for Excel 97 - 2003). Click to open the dialog for saving/displaying the XLS file. Diagram is embedded as graphic; values can be changed manually. Values changes do not effect the embedded graphic. |
| <i>TIFF</i> | Report is saved as graphic in the TIFF format. Click to open the dialog for saving/displaying the TIFF file. |
| <i>Word</i> | Report is saved as Word file (.doc, for Word 97 - 2003). Click to open the dialog for saving/displaying the DOC file. Diagram is embedded as graphic; values can be changed manually. Values changes do not effect the embedded graphic. |



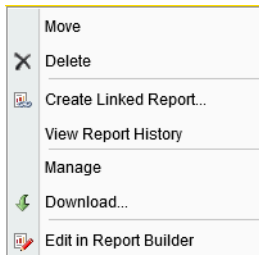
Information

Reports are always defined for a certain output medium (see export formats). If they are output to other media, this can lead to the appearance being corrupted.

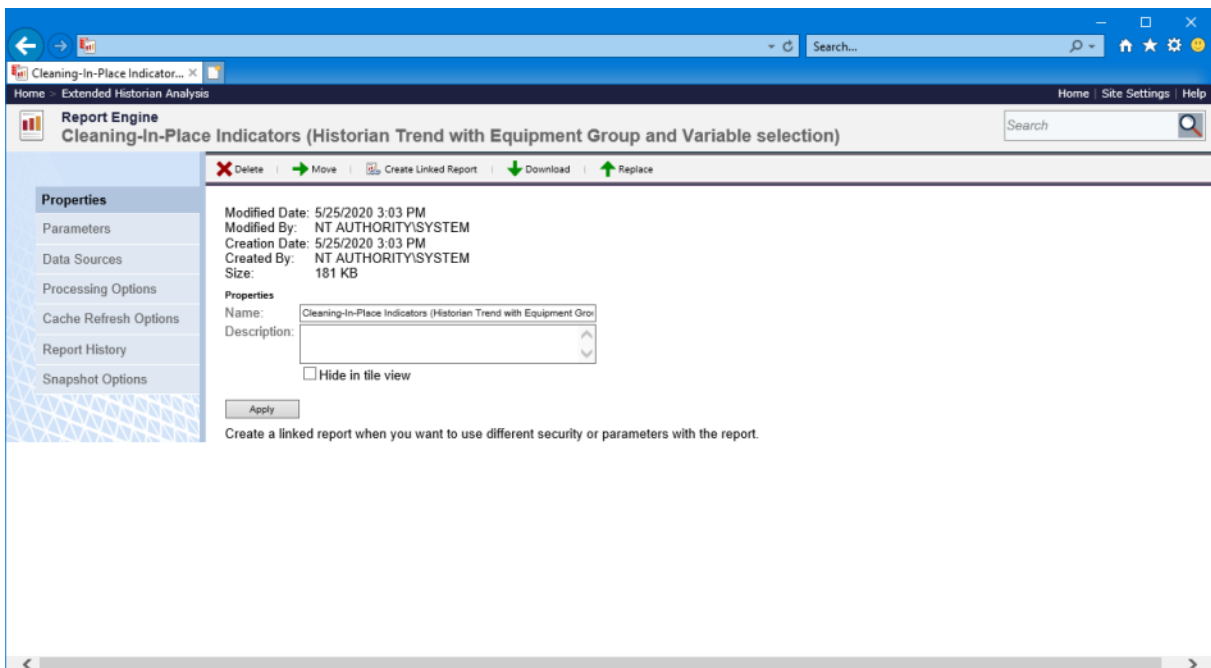
For example: A report configured for HTML can create page breaks that are unsuitable for PDFs. To create a report on several media, create a separate report for each medium.

9 Manage reports

Reports are managed via the drop-down list at the report.



Click on **Manage** to open the dialog for managing the reports:

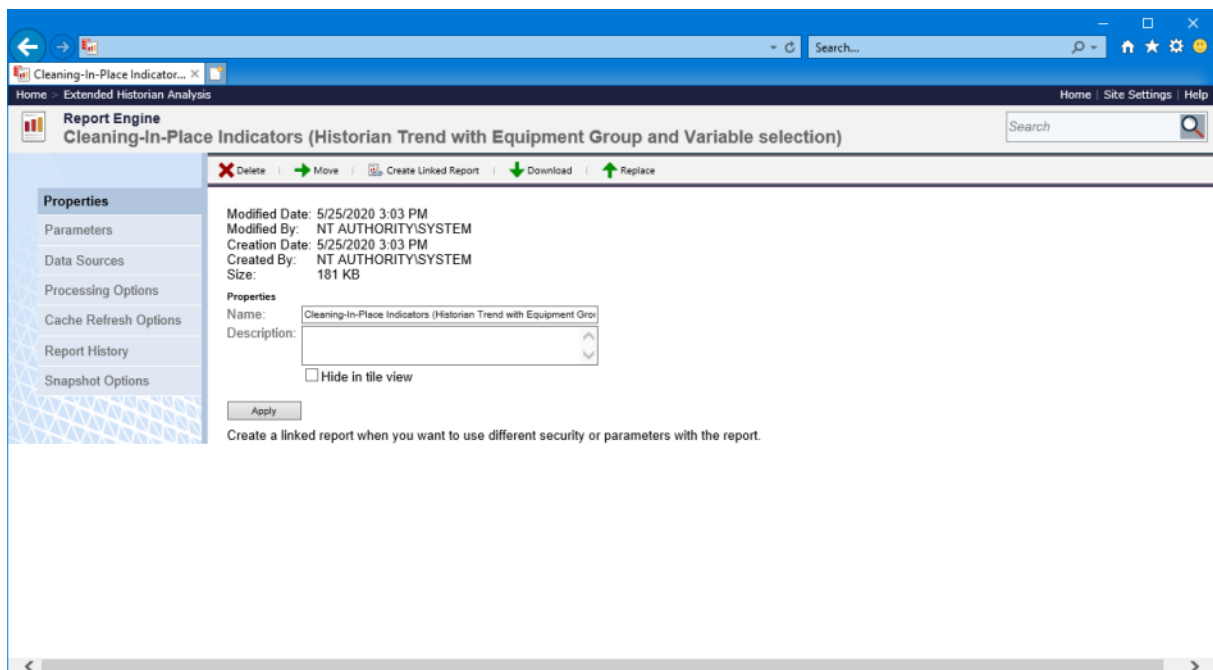


| Option | Description |
|---|--|
| Properties (on page 68) | Properties of the report. |
| Parameter (on page 69) | Configuration of the parameters of the report. |
| Data Sources (on page 73) | Selection of data sources. |
| Processing Options (on page 74) | Configuration of the editing of the report. |
| Cache Refresh Options (on page 78) | Creation and editing of the plans for the cache updating. |
| Report History (on page 79) | Allows snapshots of reports to be combined into a history. |

| Option | Description |
|--------------------------------------|-----------------------------|
| Snapshot Options (on page 79) | Configuration of snapshots. |

9.1 Properties

In window Properties basic properties are displayed and configured.



TOOL BAR

| Symbol | Description |
|-----------------------------|--|
| Delete | Delete report. |
| Move | Opens the dialog for moving a report to another folder. |
| Create linked report | Opens dialog for creating a linked report. Linked reports make it possible to use different security settings for a report. |
| Download | Opens dialog for downloading (on page 17) a report. |
| Replace | Opens the dialog for uploading a report definition in order to replace the existing one. |

PROPERTIES

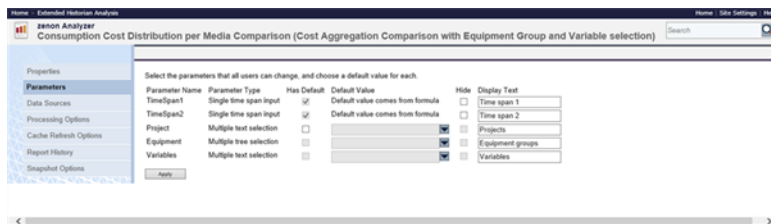
| Option | Description |
|----------------------------|---|
| Report data | Display of: Date of change Person who changed the report Date of creation Person who created the report Size |
| Name | Name of the report. Rules: Must not be empty. Must not consist of periods or spaces Must not contain non-permitted characters; The following are not permitted: ;?:@&=+\$,* <> "/ Maximum length: <i>126 characters</i> |
| Description | Description. Can already be set in Reporting Studio as a comment. Entries in Reporting Studio overwrite entries from Report Launcher during deployment. |
| Hide in symbol view | Active: Report is not displayed in symbol view. |
| Apply | Applies changes. |

9.2 Parameter

Displays the parameter of the report and makes it possible to:

- ▶ assign a default
- ▶ hide parameter for user
- ▶ to configure the text with which the parameter in the report is displayed

The options that are shown depend on the type of report.



| Option | Description |
|-----------------------|--|
| Parameter Name | Name of the parameter. Display only. |
| Parameter Type | Type of the parameter. Display only. Displays whether: <ul style="list-style-type: none"> a parameter allows one or more values it is a specialized filter control element (Boolean, shift, lot, time range, tree display) the parameter serves for the input of values or the selection of a value from a drop-down list of pre-defined values For non-specialized controls, the data type is also shown. |
| Has default | <p><i>Active:</i> Default value is preset in the report for the input.</p> <p><i>Active and grayed out:</i> Default values of a parameter come from a form or a data set. Default values cannot be changed.</p> <p><i>Inactive:</i> No value is preset.</p> <p>Each change to the check status of this checkbox made by the user is immediately forwarded to the server.</p> |
| Default Value | <p>The corresponding filter element for the parameter is shown here. Each parameter with the option activated must be given a default value in this column, in order for the configuration to be valid. Each change of value by the user is immediately forwarded to the server.</p> <p>Possible elements:</p> <p>Text element: Is displayed if the Has default value option is <i>active and grayed out</i> and contains the</p> |

| Option | Description |
|---------------------|---|
| | <p>reason why.</p> <p>Drop-down list: Contains selection of parameters for configurable parameters. Drop-down list can be filtered. It can be operated if the default value of the parameter can be changed and the option Has default value has been selected. Value changes are only accepted if the drop-down list has been closed.</p> <p>Input field: Allows the input of parameters for configurable parameters. Entry is possible if the default value of the parameter can be changed and the Has default option has been selected. Value changes are only accepted if the input field is no longer in focus.</p> |
| Hide | <p><i>Inactive:</i> Parameter is shown. The Display text option must contain a value in order for the configuration to be valid.</p> <p><i>Active:</i> Parameter is hidden. The Display text option is emptied.</p> <p>A parameter can only be hidden if it has a valid default value (has default value option has been selected and default value has been selected).</p> <p>If a parameter cannot be hidden, the checkbox is not selected and deactivated.</p> <p>Each change to the check status is immediately forwarded to the server.</p> |
| Display Text | <p>Enter the text with which the parameter will be displayed in the report.</p> <p>Only active if the Hide option has not been selected.</p> <p>The input field only recognizes changes if it is not in focus.</p> |
| Apply | <p>Clicking on the button accepts settings if all options have been correctly configured.</p> <p>If there are configuration errors, these are displayed next to the corresponding option.</p> |

| Option | Description |
|--------|--|
| | If the configuration has been saved, this is displayed below the button. |

Note: Internal parameters control filter control elements that are used for other parameters or limits for diagrams, or markers for archive distribution. Internally, parameters whose name starts with **ChartStart**, **ChartEnd** or **Hidden** or ends with **_Type**. They have default values and are hidden in Report Launcher. They are shown in Report Builder however.

Recommendation: Do not change these parameters!

Attention

Error messages for parameters:

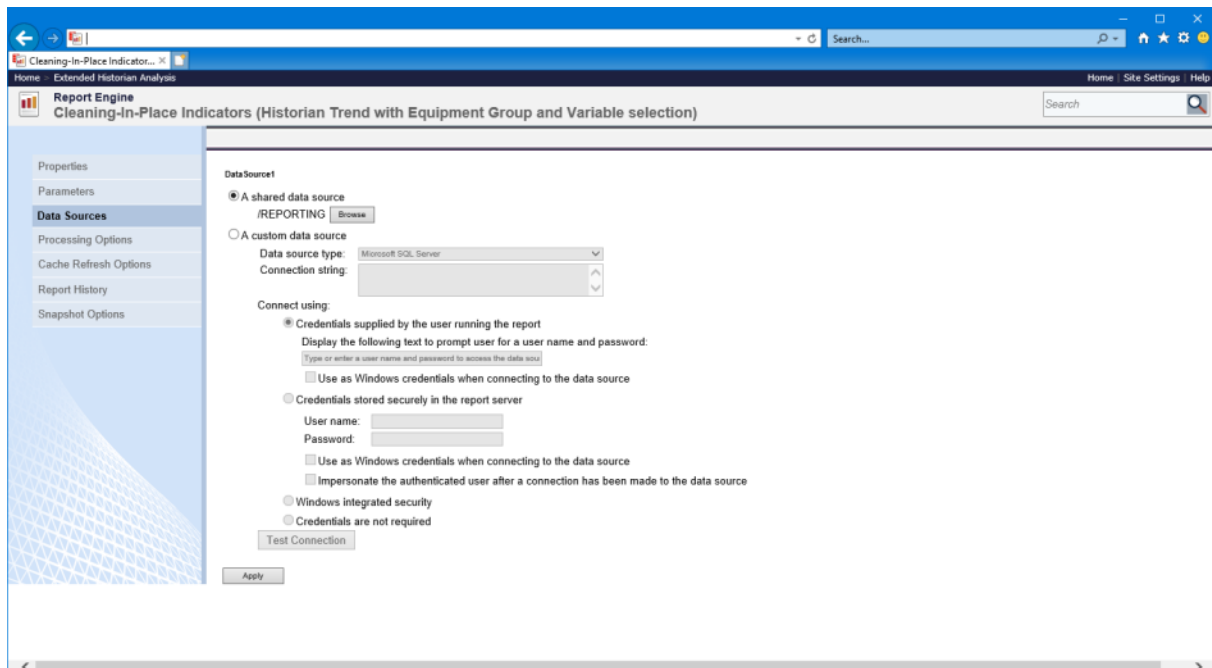
For some parameters, the values available must be loaded via a Stored Procedure of Microsoft SQL Server. If this Stored Procedure is not successfully called up or the Stored Procedure returns an error, an error message is activated in Report Launcher. For example, if Service Engine cannot be reached, the SQL connector has not been created, etc.

For some parameters, no proposed value can be issued under some circumstances, because a parameter that is to be handled beforehand does not contain a value.

For example: Time filters are based on shifts, but there is no shift data available. in this case, the issue of proposed values is only possible if at least 1 shift has been written.

9.3 Data Sources

Assigns a report to the data source.



| Option | Description |
|---|--|
| An approved data source | Active: An approved database is used. The name is displayed under options. Clicking on the Search button opens the dialog to select a data source. |
| A user-defined data source | Configuration of a user-defined data source. |
| Data source type | Selection of the type via drop-down list. |
| Connection string | String for establishing the connection. |
| Establish connection via | Selection of the connection method. |
| Provided login information of the user who executes the report | User must state information. It is possible to display an instruction The information can be marked as Window login information. |
| Login information which are saved securely on the report server | Login information is saved on the server. User name and password must be entered. The following are available as an option: |

| Option | Description |
|--------------------------------------|---|
| | <p>Use of Windows authentication when connecting to the data source.</p> <p>Assumption of the identity of the user entered after establishing a connection.</p> |
| Integrated Windows security | Windows security. |
| No login information required | No login information is necessary. |
| Test Connection | Checks connection and displays a success/failure message below the button. |
| Apply | Applies all settings. |

CHANGE PASSWORD

It can happen that the password for the data source can no longer be changed.

Procedure to allow access to the **Password** option again:

1. In the **A user-defined data source** section, activate the **No login information required** property.
2. Click on **test connection**.

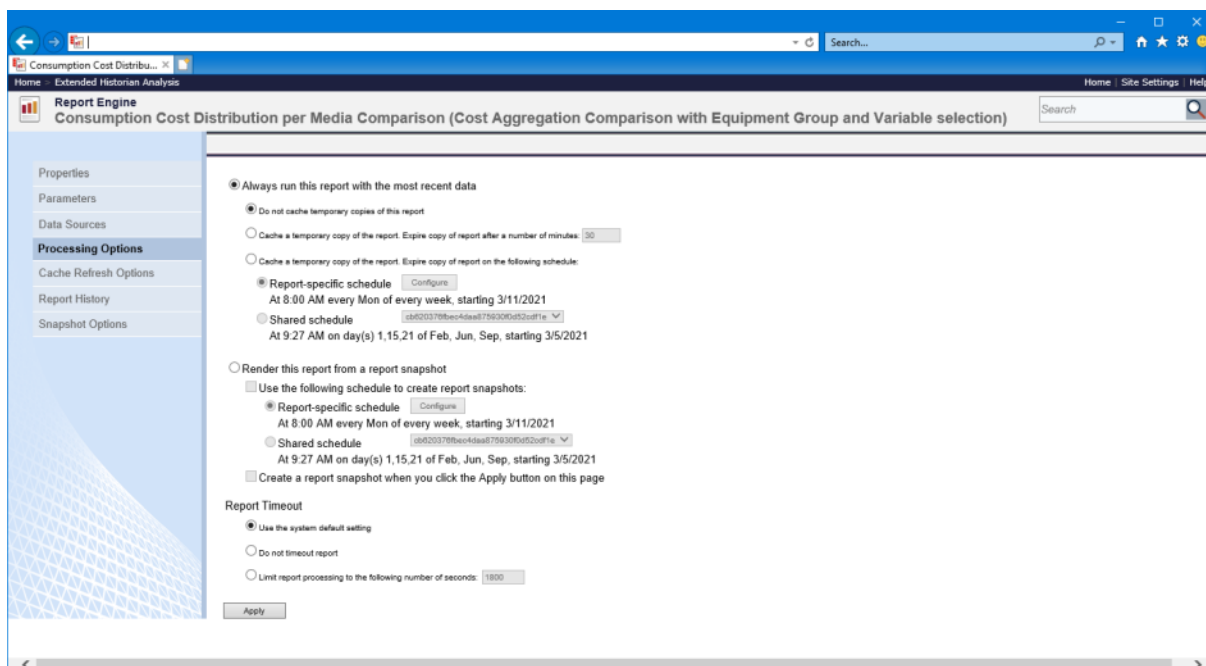
The **User name** and **Password** properties can now be changed.

9.4 Processing Options

In this window you define how the report should be filled out:

- ▶ Configuration of the buffering and process of temporary copies.
- ▶ Creation of the report based on a snapshot.

- Definition of the time out at the creation of the report



Report Engine
Consumption Cost Distribution per Media Comparison (Cost Aggregation Comparison with Equipment Group and Variable selection)

Processing Options

- ☒ Always run this report with the most recent data
 - ☒ Do not cache temporary copies of this report
 - ☐ Cache a temporary copy of the report. Expire copy of report after a number of minutes:
 - ☐ Cache a temporary copy of the report. Expire copy of report on the following schedule:
 - ☒ Report-specific schedule

At 8:00 AM every Mon of every week, starting 3/11/2021
 - ☐ Shared schedule

At 9:27 AM on day(s) 1,15,21 of Feb, Jun, Sep, starting 3/5/2021
- ☐ Render this report from a report snapshot
 - ☐ Use the following schedule to create report snapshots:
 - ☒ Report-specific schedule

At 8:00 AM every Mon of every week, starting 3/11/2021
 - ☐ Shared schedule

At 9:27 AM on day(s) 1,15,21 of Feb, Jun, Sep, starting 3/5/2021
 - ☐ Create a report snapshot when you click the Apply button on this page

Report Timeout

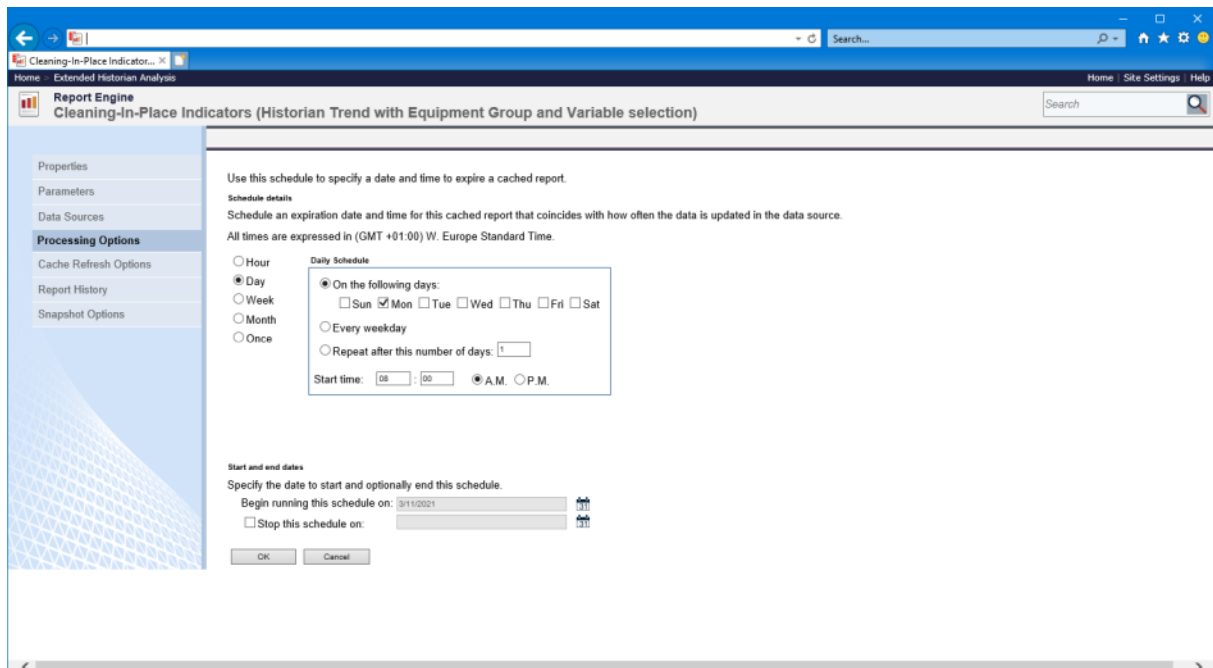
- ☒ Use the system default setting
- ☐ Do not timeout report
- ☐ Limit report processing to the following number of seconds:

| Option | Description |
|---|---|
| Always execute this report with the most recent data | <p>Active: The report is always executed with the current data.</p> <p>Selection of an option for temporary copies:</p> <p>Do not cache a temporary copy of this report</p> <p>Cache a temporary copy of this report. This copy shall expire after the following number of minutes: Entry of minutes in the field. Default:30</p> <p>Cache a temporary copy of this report.Expire copy of report on the following schedule: Schedule (on page 77) selection and configuration: Report-specific schedule: Click on Configuration in order to open the configuration dialog. Shared schedule: Clicking on Test checks the configuration.</p> |
| Render this report from a snapshot | <p>Active: The report is rendered as a snapshot.</p> |

| Option | Description |
|-----------------------|--|
| | <p>Can be configured as an option.</p> <p>Schedule (on page 77) selection and configuration:</p> <p>Report-specific schedule: Click on Configuration in order to open the configuration dialog.</p> <p>Shared schedule: Clicking on Test checks the configuration.</p> |
| Report timeout | <p>Configuration of the timeout for the report.</p> <p>Options:</p> <p>Use the system default setting: These are set out in the General (on page 50)site settings.</p> <p>Do not timeout report</p> <p>Limit processing of the report to the following number of seconds: Entry of seconds in the field. Default:1800Do not timeout report:</p> |
| Apply | <p>Takes over changed settings</p> <p>Attention: If you leave the site without clicking Apply, all changes will be lost.</p> |

9.4.1 Schedule

Configuration of schedules for the preparation of reports.

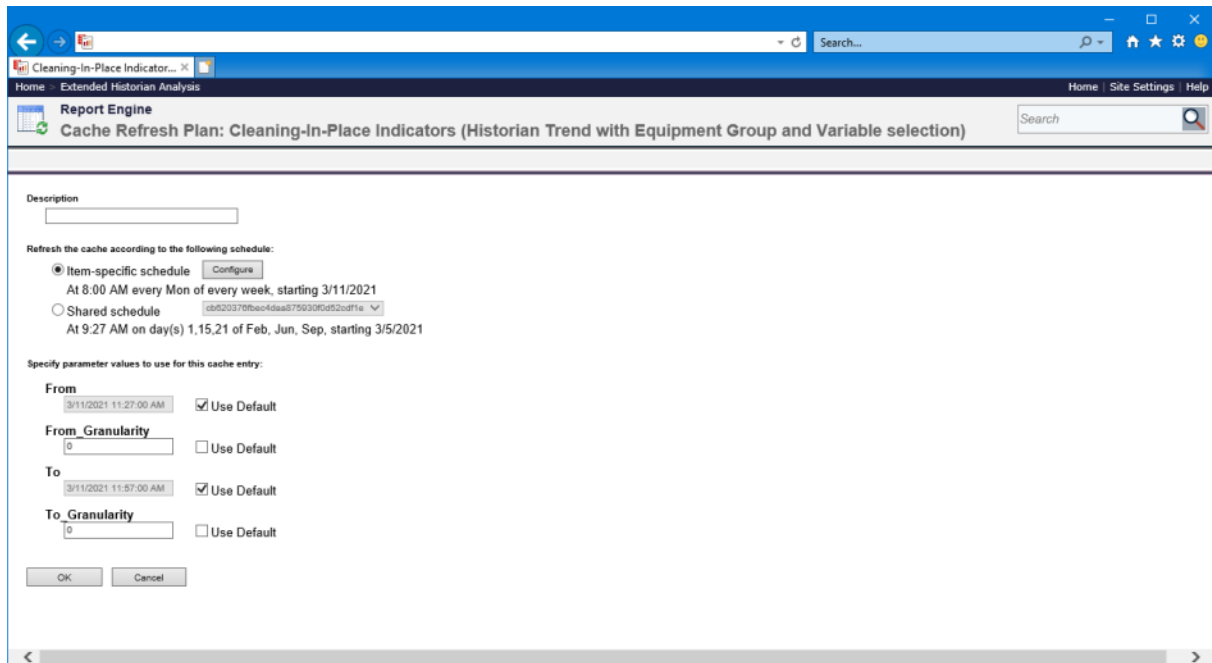


| Parameter | Description |
|-----------------------|---|
| Selection of interval | <p>Selection of the interval:</p> <ul style="list-style-type: none"> Hour Day Week Month Once <p>Details are configured in the Schedule option.</p> |
| Schedule | Configuration of the selected interval. Options available depend on the interval. |
| Start and end date | Configuration of the start date. The expiry date can also be established as an option. |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

9.5 Cache Refresh Options

Makes it possible to create and to edit schedules for cache update.

Click on edit in order to open the dialog for creating and editing a schedule.



| Option | Description |
|--|--|
| Description | Name for plan. |
| Update cache in accordance with the following schedule | Selection of the schedule. Click on button Configure in order to open the dialog for creating a schedule. |
| State parameter values for this cache entry | Enter the parameters for the report. |
| OK | Accepts input and closes dialog. |
| Cancel | Discards entries and closes the dialog. |



Information

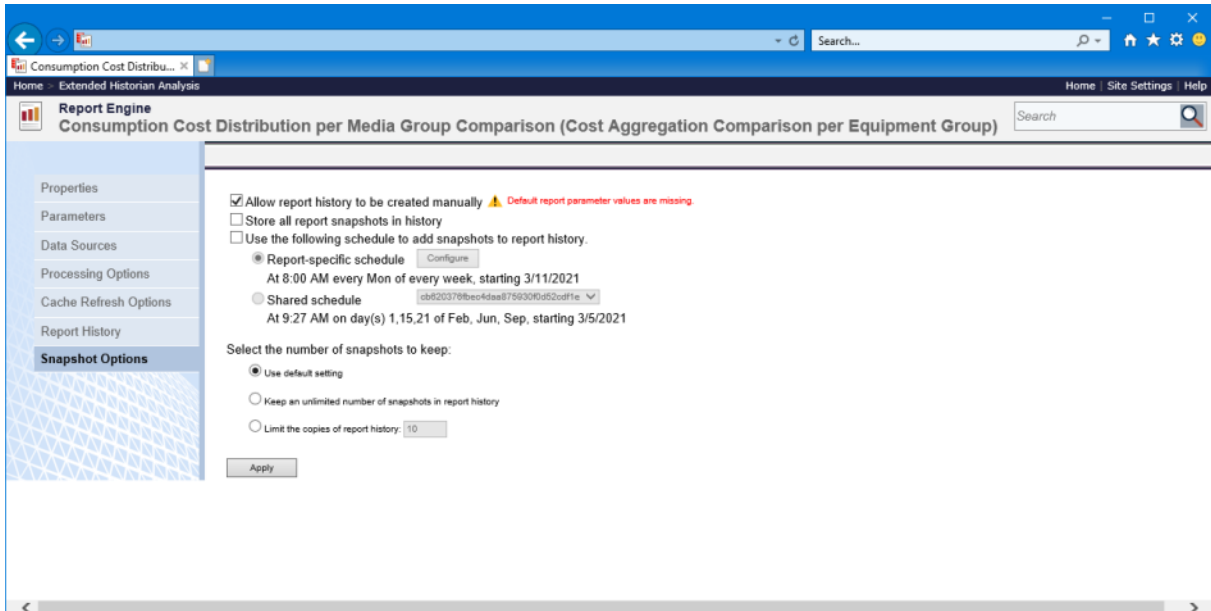
This **cache update** function only relates to Report Launcher and is not identical to the **update cache** action in Reporting Studio.

9.6 Report History

Assembles snapshots of reports to a history.

9.7 Snapshot Options

Options for snapshots.



| Option | Description |
|---|---|
| Allow report history to be created manually: | <i>Active:</i> Manual snapshots are possible. |
| Store all report snapshots in history | <i>Active:</i> each snapshot is also displayed in the report history. |
| Schedule | Selection of the schedule or creation of a new schedule. |
| Maximum number of snapshots | <p>Define how many snapshots should be saved. Options:</p> <p>Use default settings: These are set out in the General (on page 50)site settings.</p> <p>Keep an unlimited number of snapshots in report history: Saves as many snapshots as desired. Number is limited by memory space.</p> |

| Option | Description |
|--------------|--|
| | Max. number of copies of the report history: Entry of the number in the field. Default: 10 |
| Apply | Clicking on the button accepts settings if all options have been correctly configured. If there are configuration errors, these are displayed next to the corresponding option. If the configuration has been saved, this is displayed below the button. |

10 Validation of formulas

Formulas are validated in reports. This affects reports in the **Custom Formula Analysis** group and all efficiency class analysis reports that use custom formulas.

Validation errors are:

- ▶ No data or invalid data
- ▶ Incorrect setting of parameters.
(Note: Incorrect setting of parameters is not possible in Reporting Studio, but can occur as a result of the RDL being edited directly.)

If validation errors are discovered when calculating a formula value, this formula is not executed. No value is thus written. With time-stamp-related calculations, only the formula for the time stamp in question is not executed.

Validations occur for:

- ▶ Calculated fields before aggregation (separate for each time stamp; prescribed by the formula)
- ▶ Aggregation (over intervals or over the complete time period: at least one value in the time period)
- ▶ Calculated fields after aggregation (for each interval or complete time period; prescribed by the formula)

Validations per formula:

| Action | Validation |
|--------------------------------|--|
| Addition | Both operands have a value. |
| Subtraction | Both operands have a value. |
| Multiplication | Both operands have a value. |
| Division | Both operands have a value. Divisor is not 0. |
| Absolute | Operand has a value. |
| Natural logarithm | Operand has a value > 0 . |
| Base 10 logarithm | Operand has a value > 0 . |
| e^x | Operand has a value. |
| x^n | Operand has a value. Exponent > 1 . |
| b^x | Operand has a value. Base > 1 . |
| Root | Operand has a value ≥ 0 . Order > 1 . |
| Rounding up to next integer: | Operand has a value. |
| Rounding down to next integer: | Operand has a value. |
| Rounding with precision | Operand has a value. |
| Sine | Operand has a value. |
| Cosine | Operand has a value. |
| Tangent | Operand has a value. Cosine (value) not 0. |
| Cotangent | Operand has a value. Sine (value) not 0. |
| Arc sine | Operand has a value. Value in range -1 to 1 |

| Action | Validation |
|------------------|---|
| Arc cosine | Operand has a value. Value in range -1 to 1. |
| Arc tangent | Operand has a value. |
| Rad -> Deg | Operand has a value. |
| Deg -> Rad | Operand has a value. |
| SUM | All operands have a value. |
| AVG | All operands have a value. |
| MIN | All operands have a value. |
| MAX | All operands have a value. |
| Base N logarithm | Operand has a value > 0. Base > 1. |

11 Error logging

Report Engine uses the zenon Diagnosis Viewer (on page 82) logging service to collect and display error messages.

Note: The connector cannot forward messages to the Diagnosis Viewer under Windows XP. In this case, error messages are saved locally.

11.1 Diagnosis Viewer

All zenon services, such as Engineering Studio, Service Engine, drivers, etc., as well as Report Engine write messages to a joint LOG file. These can be read and configured with the **Diagnosis Viewer** program. **Diagnosis Viewer** allows the reading of existing LOG files, online logging, saving of the current view, configuring the **Diagnosis Clients** and the **Diagnosis Server**.

START THE DIAGNOSIS VIEWER

The **Diagnosis Viewer** is installed in the folder: *%Program Files (x86)%\Common Files\COPA-DATA\STARTUP*.

To start, enter **Diagnosis Viewer** in the Windows start window.

The **Diagnosis Viewer** is only available in English.

USING IPV6

The **Diagnosis Server** also works with **Diagnosis Clients** which are addressed via IPv6 addresses. For this the format of the LOG file has been adapted. The **Diagnosis Viewer** only supports the new format of the LOG files. If files from older zenon versions are opened with the current version of the **Diagnosis Viewer**, the IP address of the **Diagnosis Client** is not displayed correctly. If the current file format is opened with an older version of the **Diagnosis Viewer**, the IP address is also not displayed correctly.

DRIVER ANALYSIS

zenon drivers log all errors in the LOG files. LOG files are text files with a special structure. The default folder for the LOG files is subfolder **LOG** in the folder **ProgramData**. For example:

%ProgramData%\COPA-DATA\LOG.

Attention: With the default settings, a driver only logs error information. With the **Diagnosis Viewer** you can enhance the diagnosis level for most of the drivers to "Debug" and "Deep Debug". With this the driver also logs all other important tasks and events.

In the **Diagnosis Viewer** you can also:

- ▶ Follow newly-created entries in real time
- ▶ customize the logging settings
- ▶ change the folder in which the LOG files are saved

Notes:

1. The **Diagnosis Viewer** displays all entries in UTC (coordinated world time) and not in local time.
2. The **Diagnosis Viewer** does not display all columns of a LOG file per default. To display more columns activate property **Add all columns with entry** in the context menu of the column header.
3. If you only use **Error-Logging**, the problem description is in the column **Error text**. For other diagnosis level the description is in the column **General text**.
4. In case of communication problems, many drivers also log error numbers which the PLC assigns to them. They are displayed in **Error text** or **Error code** or **Driver error parameter (1 and 2)**. Hints on the meaning of error codes can be found in the driver documentation and the protocol/PLC description.
5. At the end of your test set back the diagnosis level from **Debug** or **Deep Debug**. At **Debug** and **Deep Debug**, there are a great deal of data for logging which are saved to the storage

medium and which can influence your system performance. These data are still logged even after you close the **Diagnosis Viewer**.

11.1.1 General

The zenon Diagnosis System logs error messages from Service Engine and Report Engine.

The Diagnosis System consists of three parts:

- ▶ **Diagnosis Server** (on page 93): the service is by default running locally on every computer with zenon. Additional configurations can be configured in *zenon6.ini*. You can find further information on this in the **Diagnosis Server [SYS_REMOTE] and [Logging_System]** chapter of the **Configuration files** manual.
- ▶ **Diagnosis Clients** (on page 98): all services, drivers, apps, etc. which write messages
- ▶ **Diagnosis Viewer** (on page 101): Analysis program

PORT

The Diagnosis System uses port 50780 (port of the **zenLogSrv** service) for communication.

If the port cannot be opened, the service closes itself.

⚠ Attention

If the port to which the **Diagnosis Viewer** should connect is closes, then it is tried to start the local **Diagnosis Server**. This makes sure that local logging is carried out if no **Diagnosis Server** is available in the network.

MEMORY OCCUPANCY

The **zenLogSrv** service buffers LOG entries in the memory of the computer before they are written in the LOG file.

If the **zenLogSrv** service uses increasingly more memory, this is a sign that the entries cannot be written correctly in the LOG file.

Perform the following steps to check the required memory for the **zenLogSrv** service:

1. Start the Task Manager.
2. Switch to the **Details** tab.
3. Watch the **Memory (active private working set)** column in the entry for **zenLogSrv.exe**.

4. If the value continues to increase when Service Engine is running, the buffered values cannot be written in the LOG file.

Possible causes:

LOG file is write-protected.

LOG file is corrupt.

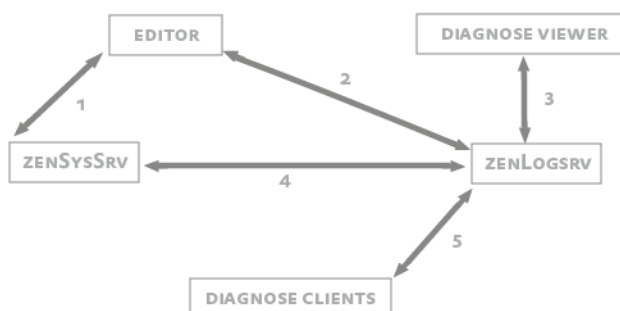
LOG file is opened in another application and thus write-protected.

Available memory on the medium is depleted.

Insufficient access authorizations for the active user for the LOG file.

11.1.2 Topology of the diagnosis system

The diagram displays all possible connections for which **zenSysSrv** and **zenLogSrv** (as of version 7.00 SP0) are responsible. Each arrow represents a network connection between the applications. All applications connect to **zenLogSrv** on port 50780. Engineering Studio connects to **zenSysSrv** on port 1101. It is regardless of whether Client and Server are on the same computer or communicate with each other via a network.



1. Engineering Studio sends commands and data of the Remote Transport to **zenSysSrv**. **zenSysSrv** sends data of the Remote Transport to Engineering Studio.
2. Engineering Studio sends LOG entries to **zenLogSrv**. **zenLogSrv** sends the configuration of the Diagnosis Clients to Engineering Studio.
3. The **Diagnosis Viewer** sends diagnosis commands, diagnosis configurations and LOG entries to **zenLogSrv**. **zenLogSrv** sends diagnosis data and the Diagnosis Client configuration to the **Diagnosis Viewer**.
4. **zenSysSrv** sends LOG entries to **zenLogSrv**. **zenLogSrv** sends the configuration of the Diagnosis Clients to **zenSysSrv**.
5. **zenLogSrv** sends the configuration of the Diagnosis Clients to the Diagnosis Clients. Diagnosis Clients send LOG entries to **zenLogSrv**.

The **zenSysSrv** reacts to incoming Remote Transport commands.
zenLogSrv reacts to incoming diagnosis commands and LOG entries

EXAMPLE

In an environment with a central **Diagnosis Server**, Service Engine is started on a device. Based on the Service Engine version, the configuration is read from *zenon6.ini*. Versions before 7.00 SP0, read the **LOG_CONFIG** entry from **[SYS_REMOTE]**, later versions read this entry from **[LOGGING_SYSTEM]**. This configuration is used to establish a diagnosis connection. (For details see Standard procedure (on page 86).) Each additional component loaded by Service Engine (driver, **zenNetSrv**, etc.) also establishes a diagnosis connection.

You can find further information on this in the **Diagnosis Server [SYS_REMOTE] and [LOGGING_SYSTEM]** chapter of the **Configuration files** manual.

11.1.3 Procedure

By default, only error messages (errors) are logged by the clients and sent to the **Diagnosis Server**.

The **Diagnosis Server** saves the received messages in TXT files with a special structure (on page 117). The default folder for the LOG files is the subfolder **LOG** in the folder **%ProgramData%**. For example: **%ProgramData%\COPA-DATA\LOG**

You can find further information in the installation and updates manual in the File structure chapter.

In order to log and send not only error messages to the **Diagnosis Server** but also other information important for the diagnosis, the appropriate settings have to be defined for the Client (on page 98).

You can also configure the behavior of the Server (on page 93).

CONFIGURATION

The configuration of the connection is done in *zenon6.ini* (on page 87), divided into:

- ▶ **Diagnosis Clients**
- ▶ **Diagnosis Server**
- ▶ Versions, to make sure that the configuration of the versions does not affect each other

The configuration of the **Diagnosis Viewer** (on page 101) also enables you to configure settings for the connection:

- ▶ Settings of the server (on page 95)
- ▶ Connection setting for **Diagnosis Server** connection (on page 103)
- ▶ **Diagnosis Client** (on page 98)
- ▶ **Diagnosis Viewer** analysis program (on page 101)

We recommend using *zenon6.ini* to configure the connections for Server and Client.

PROCEDURE

The **Diagnosis Server** is a service on the computer.

The service is started automatically when the operating system is started. The local service can only be started once.

As soon as a **Diagnosis Client** gets active, the following steps are carried out:

1. The **Diagnosis Client** reads and uses the configuration from *zenon6.ini*. If no configuration is available in *zenon6.ini*, the default configuration (**Diagnosis Server=localhost:50780**) is used.
2. The **Diagnosis Client** attempts to establish a connection to the **Diagnosis Server**:

Establishing successful:

The diagnosis connection has been established and the LOG entries are sent.

Establishing failed:

The **Diagnosis Client** attempts to establish a connection to the local **Diagnosis Server**. If it succeeds, the diagnosis connection is established and the LOG entries are sent.

If it fails, no LOG entries are created.

11.1.3.1 Entries in zenon6.ini

zenSysSrv and **zenLogSrv** are configured in *zenon6.ini*.

DIAGNOSIS SERVER

| INI entry | Description |
|------------------|---|
| [LOGGING_SYSTEM] | Section in <i>zenon6.ini</i> . Contains parameters for Diagnosis Server . Only affects zenLogSrv and has no effect on zenSysSrv . |
| LOGDirectory= | Defines the folder for the LOG files. If there is no entry, the following is used: The path extracted from the Registry, e.g. %ProgramData%\COPA-DATA\LOG the LOG folder in the %ProgramData% folder of the zenLogSrv , if no path is defined in the registry, |

| INI entry | Description |
|-----------------------------|--|
| | e. g. %ProgramData%\COPA-DATA\zenon760\LOG |
| CONFIG= | <p>Configuration string for the Diagnosis Server. The string consists of the following parts:</p> <p>DEVICE=TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]</p> <p><i>DEVICE</i>: Sets the parameters for the communication type used and must always be set to <i>TCP/IP</i></p> <p><i>HOST</i>: Configuration of the computer name on which the Diagnosis Server is running.</p> <p><i>PORT</i>: states the port to be used.</p> <p><i>TIMEOUT</i>: Provides the timeout time for the connection in seconds.</p> <p>Configuration:</p> <p><i>DEVICE</i>=TCP/IP</p> <p><i>HOST</i>=localhost</p> <p><i>PORT</i>=50780</p> <p><i>TIMEOUT</i>=10</p> |
| LOGMinFreeDiskSpace= | <p>Defines the minimum memory (in MB) that must be available on the storage medium. LOG files are deleted before this value is gone below.</p> <p>Default:1024</p> |
| LOGMaxUsedDiskSpace= | <p>Defines the maximum memory on the storage medium (in MB) used for LOG files. LOG files are deleted if this value is exceeded.</p> <p>Default:1024</p> |
| LOGMinUsedDiskSpace= | <p>Defines the memory on the storage medium (in MB) that is used even if there are no LOG files.</p> <p>Default:5</p> |
| LOGLogLifeTime= | <p>Defines the lifecycle of the LOG files in seconds. Older LOG files are deleted.</p> <p>Default:1209600 (corresponds to 14 days)</p> |
| LOGImageCnt= | <p>Defines the number of LOG entries, after which all incremental LOG files are written.</p> <p>Default: 0</p> |

| INI entry | Description |
|----------------------------|---|
| LOGLogUpdateTime= | Number of milliseconds, after which the LOG entries received are written to a LOG file. Default:2000 |
| LOGMaxBufferedRecs= | Defines the number of LOG entries that are buffered if they cannot be written to files. Default:10240 |
| LOGMaxLogFileSize= | Maximal size of a LOG file in bytes. If a LOG file reaches this size, it is closed and a new LOG file is created. Default:5242880 (corresponds to 5 MB) |
| LOGCheckDiskTime= | Defines the interval in seconds, in which the memory occupied by LOG files is checked. Default:60 |
| INIT= | Action when starting the application with Windows CE: 0: end immediately 1 (or other value greater than 2): Open Listening Port and minimize in system tray 2: only display surface Default:1 |

DIAGNOSIS CLIENT

| INI entry | Description |
|-------------------------|---|
| [LOGGING_SYSTEM] | Section in <i>zenon6.ini</i> . Contains parameters for Diagnosis Client . |
| LOG_CONFIG= | A configuration string for the Diagnosis Client is stored here. The string consists of the following parts: DEVICE=TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout] <i>DEVICE</i> : Sets the communication type used and must always be set to <i>TCP/IP</i> <i>HOST</i> : is set to the computer name of the Diagnosis Server . <i>PORT</i> : states the port to be used. |

| INI entry | Description |
|-----------|--|
| | <p><i>TIMEOUT</i>: Provides the timeout time for the connection in seconds.</p> <p><u>Configuration:</u></p> <p><i>DEVICE</i>=TCP/IP</p> <p><i>HOST</i>=localhost</p> <p><i>PORT</i>=50780</p> <p><i>TIMEOUT</i>=10</p> |

NOTE ON COMPATIBILITY

As of zenon version 7.00, the technology for the **Diagnosis Viewer** has been redeveloped. This change applies both for **Diagnosis Clients** as well as for the **Diagnosis Server**.

A difference is made between versions from 7.00 and up to and including version 6.51. With this you can configure old and new **Diagnosis Clients** and **Diagnosis Server** independent of each other on one device. For example, the LOG entries of old **Diagnosis Clients** are sent to the old **Diagnosis Server**, without the LOG entries of new **Diagnose Clients** being affected by them.

ZENLOGSRV ON A SYSTEM WITH DIFFERENT ZENON VERSIONS

If **zenLogSrv** is used for a system with different zenon versions as a central local **Diagnosis Server**, the **LOG_CONFIG** entry in the **[SYS_REMOTE]** section must be as follows:

DEVICE=TCP/IP;**HOST**=localhost;**PORT**=5780;**TIMEOUT**=10

Reason: Older clients use the **zenLogSrv** as a result of this entry (instead of the obsolete **zenSysSrv** service) as a **Diagnosis Server**. New clients use the current **zenLogSrv** service by default. This service is automatically started when the system is started.

Attention: If the port cannot be reached, older clients start **zenSysSrv** and retry connecting to it.

DIAGNOSIS SERVER PRIOR TO VERSION 7.00 SP0

| INI entry | Description |
|----------------------|---|
| [SYS_REMOTE] | <p>Section in <i>zenon6.ini</i>.</p> <p>Contains parameters for <i>zenSysSrv</i> (Remote Transport and Diagnosis Server).</p> |
| LOGDirectory= | <p>Defines the folder for the LOG files.</p> <p>If there is no entry, the LOG folder in the %ProgramData% folder is used by default.</p> |

| INI entry | Description |
|---------------------------------|---|
| | Example: LOGDirectory =%ProgramData%\COPA-DATA\zenon760\LOG |
| CONFIG= | <p>Configuration string for the Diagnosis Server and zenSysSrv . Remote Transport and Diagnosis System use the same server configuration up to and including version 6.51 SP0. The string consists of the following parts:</p> <p>DEVICE=[Device];HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]</p> <p><i>DEVICE</i>: Sets the communication type used. <i>TCP/IP</i> and <i>serial</i> are available.</p> <p><i>HOST</i>: is set to the computer name of the Diagnosis Server.</p> <p><i>PORT</i>: states the port to be used.</p> <p><i>TIMEOUT</i>: Provides the timeout time for the connection in seconds.</p> <p><i>BAUD</i>: provides the connection speed of a serial connection.</p> <p>PC configuration:</p> <p><i>DEVICE</i>=TCP/IP <i>HOST</i>=localhost <i>PORT</i>=1101 <i>TIMEOUT</i>=10</p> <p>CE configuration:</p> <p><i>DEVICE</i>=COM1 <i>BAUD</i>=115200</p> |
| LOGMinFreeDiskSpace = | <p>Defines the minimum memory (in MB) that must be available on the storage medium. LOG files are deleted before this value is gone below.</p> <p>Default:1024</p> |
| LOGMaxUsedDiskSpace = | <p>Defines the maximum memory on the storage medium (in MB) used for LOG files. LOG files are deleted if this value is exceeded.</p> <p>Default:1024</p> |
| LOGMinUsedDiskSpace = | <p>Defines the memory on the storage medium (in MB) that is used even if there are no LOG files.</p> <p>Default:5</p> |

| INI entry | Description |
|----------------------------|---|
| LOGLogLifeTime= | Defines the lifecycle of the LOG files in seconds. Older LOG files are deleted. Default:1209600 (corresponds to 14 days) |
| LOGImageCnt= | Defines the number of LOG entries, after which all incremental LOG files are written. 0: inactive (default) |
| LOGLogUpdateTime= | Number of milliseconds, after which the LOG entries received are written to a LOG file. Default:2000 |
| LOGMaxBufferedRecs= | Defines the number of LOG entries that are buffered if they cannot be written to files. Default:10240 |
| LOGMaxLogFileSize= | Maximal size of a LOG file in bytes. If a LOG file reaches this size, it is closed and a new LOG file is created. Default:5242880 (corresponds to 5 MB) |
| LOGCheckDiskTime= | Defines the interval in seconds, in which the memory occupied by LOG files is checked. Default:60 |
| INIT= | Action when starting the application with Windows CE: 0: end immediately 1 (or other value greater than 2): Open Listening Port and minimize in system tray 2: only display surface Default:1 |

DIAGNOSIS CLIENT PRIOR TO VERSION 7.00 SP0:

| INI entry | Description |
|---------------------|---|
| [SYS_REMOTE] | Section in <i>zenon6.ini</i> . Contains parameters for Diagnosis Client . |
| LOG_CONFIG= | A configuration string for the Diagnosis Client is stored here. The |

| INI entry | Description |
|-----------|--|
| | <p>string consists of the following parts:</p> <p>DEVICE=<i>TCP/IP</i>; HOST=<i>[Hostname]</i>; PORT=<i>[Port]</i>; TIMEOUT=<i>[Timeout]</i></p> <p><i>DEVICE</i>: Sets the communication type used and must always be set to <i>TCP/IP</i></p> <p><i>HOST</i>: is set to the computer name of the Diagnosis Server.</p> <p><i>PORT</i>: states the port to be used.</p> <p><i>TIMEOUT</i>: Provides the timeout time for the connection in seconds.</p> <p>Configuration:</p> <p><i>DEVICE</i>=TCP/IP</p> <p><i>HOST</i>=localhost</p> <p><i>PORT</i>=1101</p> <p><i>TIMEOUT</i>=10</p> |

11.1.4 Diagnosis Server

The **Diagnosis Server**:

- ▶ Creates and manages LOG files.
- ▶ The configuration of the server is read from *zenon6.ini* (on page 87).
- ▶ The server writes the received LOG data into the LOG file.
- ▶ The saving location for the files has to be configured. Standard:
%ProgramData%\COPA-DATA\LOG
- ▶ LOG files are named after the following fashion *LOG<YYMMTThhmmss>.dvlog*.
- ▶ The server is multi-client capable. Several evaluations can connect to the server simultaneously.
- ▶ It is possible to connect to the server online, to see the current logging messages.
- ▶ It is possible to connect to **Diagnosis Server** different than the local and to execute the same tasks (configuring server, configuring clients, online logging) as on the local server.
- ▶ The parameters of the current server (with which the **Diagnosis Viewer** is connected) can be modified. If a modification of another **Diagnosis Server** is needed, the server connection can be changed in the menu under **File – Connect to...**
- ▶ The **Settings – Server configuration** entry is only available in the menu if online logging is not currently being used.

- ▶ From version 11, the **Diagnosis Server** can also run on Linux-based Docker environments.

11.1.4.1 System integrity monitoring

Service Engine uses internal checking mechanisms to constantly check whether the computer has sufficient hardware and operating system resources to execute all of the tasks that are currently being performed.

At the start of Service Engine, an internal monitoring thread with high priority is also started. The monitoring thread checks critical parameters of the operating system and the main thread of Service Engine every 10 seconds. If the parameters exceed the intended limits, the monitoring thread logs the warnings or errors in the LOG file. The saved LOG entries can be read out and displayed with the Diagnosis Viewer (on page 82) app.

In the Diagnosis System, the monitoring thread reports as a Diagnosis Client with the name (**Name of log connection**) *zenrt32*, service: *Supervisor* to.

The LOG entries can occur for the following parameters:

| Parameter | Limit Values | General text(/Error text) in LOG |
|---|--|--|
| Information from operating system: use Handles | Warning: > 5000* Error: > 9000* | <i>Handles exceeded warning level to ...</i> |
| Information from operating system: use GDI-objects | Warning: > 5000* Error: > 9000* | <i>GDI-Objects exceeded warning level to ...</i> |
| Information from the operating system: free main memory | Warning: < 30 % Error: < 10 % | <i>Total available memory fell below warning level to ...%</i> |
| Information from operating system: Overall CPU-load | Warning: > 70 % Error: > 90 % | <i>Total CPU-Load exceeded warning level to ...%</i> |
| Information from operating system: CPU-Load of the main thread of Service Engine | Warning: > 70 % Error: > 90 % | <i>CPU-Load of main thread exceeded warning level to ...%</i> |
| Service Engine Hauptthread 100ms Timer Meaning: cyclic processing of pending tasks in the main thread. | Warning: > 1000 ms Error: > 5000 ms | <i>100ms Timer has not cycled for ...ms</i> |

*) Can be configured using the **Startup Tool**.

Example:

The following warnings are logged several times a day in the LOG:

| Timestamp | Message level | Module | Name of log ... | General text |
|-----------------|---------------|------------|-----------------|--|
| 07:51:43,759870 | WARNINGS | Supervisor | Zenrt32 | Total CPU-Load exceeded warning level to 85% |
| 07:51:53,767502 | WARNINGS | Supervisor | Zenrt32 | Total CPU-Load exceeded warning level to 84% |
| 11:10:02,673294 | WARNINGS | Supervisor | Zenrt32 | 100ms Timer has not cycled for 1719ms |
| 12:30:06,295267 | WARNINGS | Supervisor | Zenrt32 | 100ms Timer has not cycled for 1781ms |
| 13:06:33,095758 | WARNINGS | Supervisor | Zenrt32 | Total CPU-Load exceeded warning level to 71% |
| 13:06:43,103501 | WARNINGS | Supervisor | Zenrt32 | Total CPU-Load exceeded warning level to 82% |

This indicates that the project in Service Engine is temporarily using more CPU power than the computer can provide, or that blocking tasks have been configured in the project (example: incorrect API use, SQL evacuation that is too slow, flooding with alarms ,...).

Possible solutions:

- ▶ Computer upgrades.
- ▶ Revise and fix project.
- ▶ Scale project to multiple subprojects and computers (zenon network).

Hint

By creating the SYSDRV variables, local hardware resources can be evaluated on each computer, for example, free space on the storage medium.

11.1.4.2 Settings of the server

The **Diagnosis Server** can be configured by means of entries in *zenon6.ini* or by means of the **server configuration** dialog in the **Diagnosis Client**. We recommend using *zenon6.ini* to define the settings.

CONFIGURATION VIA ZENON6.INI

See the section Entries in *zenon6.ini* (on page 87).

CONFIGURATION VIA DIALOG

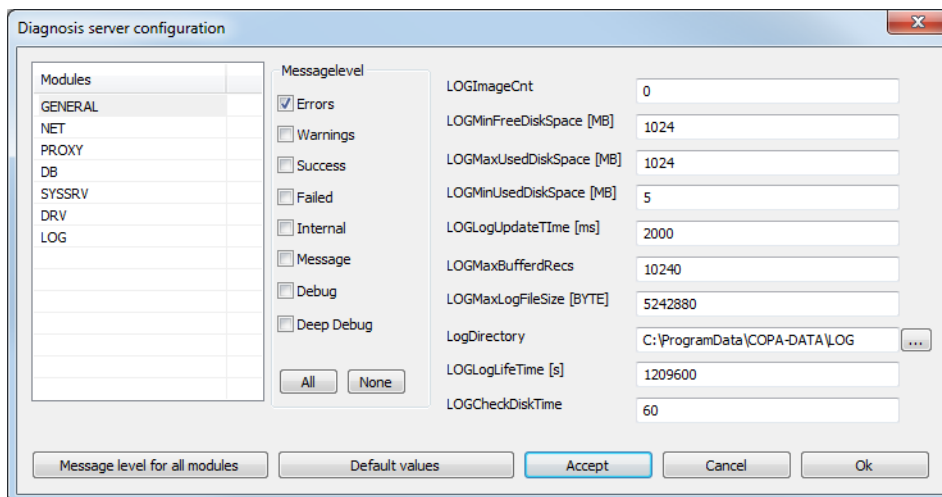
To configure the **Diagnosis Server** via the dialog:

1. start the **Diagnosis Viewer**
2. open entry **File Connect to... (on page 103)**.

3. configure the desired Server
(Take care of the correct port selection depending on the version!)
4. open entry **Settings -> Server configuration**
5. configure the events which should be logged
6. Close the dialog by clicking on **OK**

Note: All changes are written to *zenon6.ini* when the dialog is confirmed.

Configuration of the events which should be logged by the **Diagnosis Viewer**:



| Parameter | Description |
|----------------------------|---|
| Services | Selection of the services which you want to configure. |
| Messagelevel | Selection of the events which should be logged. Default: Errors |
| LOGImageCnt | Maximum number of entries that are contained in a LOG file. Once the number set in this option has been reached, a new LOG file is created. Default: 0 (the number of entries in a LOG file is not taken into account for the creation of a new LOG file.) |
| LOGMinFreeDiskSpace | It is continuously checked, if less than the configured minimal free disk space is available. The oldest LOG files are deleted. Minimal free disk space in MB, before LOG files are deleted. Default: 1024 MB |
| LOGMaxUsedDiskSpace | Maximal used disk space for the LOG file in MB. Default: 1024 MB |
| LOGMinUsedDiskSpace | Minimal used disk space in MB independent whether |

| Parameter | Description |
|---------------------------------------|---|
| e | LOGMinFreeDiskSpace is under-run. Default:5 MB |
| LOGLogUpdateTime | Time in ms, after which the received entries are saved. Default:2000 ms |
| LOGMaxBufferedRecs | <p>The server buffers the contents of all incremental LOG fields for diverse applications, in order to be able to write images of them into the LOG file. With the start of a LOG file and after a configurable number of LOG entries, a complete image for all addresses is written into the LOG file.</p> <p>Received data are written to the LOG files. The entries are not saved directly in the LOG file: The entries are first buffered in the client's memory.</p> <p>In this option, you can configure the number of LOG entries that are buffered beforehand in the memory.</p> <p>Default:10240</p> |
| LOGMaxLogFileSize | <p>The server writes the received LOG data into the LOG file. If this LOG file reaches the configured size, a new file is started.</p> <p>Maximal size of a single LOG file in bytes.</p> <p>Default:5 MB</p> |
| LOGDirectory | <p>Folder in which the LOG files are written.</p> <p>Default:%ProgramData%\COPA-DATA\LOG\</p> |
| LOGLogLifeTime | <p>It is continuously checked, if the lifetime of the LOG files is exceeded.</p> <p>The oldest LOG files are deleted.</p> <p>Number of seconds to keep the LOG files.</p> <p>Default:14 days</p> |
| LOGCheckDiskTime | <p>Time in sec, in which the used disk space id checked.</p> <p>Default:60 s</p> |
| Message level for all Services | Settings are taken over for all services. |
| Default values | Restore default settings. |
| Accept | Take over settings for this service. |
| Cancel | Discards all changes and closes the dialog. |
| OK | Applies settings and closes the dialog. |

11.1.5 Diagnosis Client

Each program that creates LOG entries is a **Diagnosis Client**. These LOG entries are sent to the **Diagnosis Server** via TCP/IP. Server computer and port are read and contacted - depending on the version used - from the local *zenon6.ini* (on page 87). If the connection fails the following procedure is carried out cyclically:

- ▶ If the **Diagnosis Server** cannot be reached, a attempt to reconnect is made every 500 ms.
- ▶ If no connection could be established after half the timeout time, the system tries to start the service **zenSysSrv** or **zenLogSrv**.

The settings are configured with the **LOG_CONFIG=** entry in the *[SYS_REMOTE]* section (up to 6.51) or *[LOGGING_SYSTEM]* (from 7.00).

CONFIGURATION OF DIAGNOSIS CLIENT

To configure the **Diagnosis Client** via the dialog:

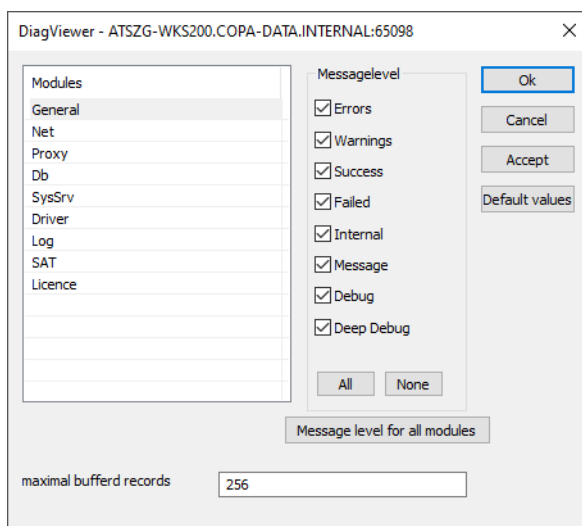
1. Start the **Diagnosis Viewer**.
2. Open the entry **Settings -> Client configuration** (only available if logging is inactive).
3. Highlight a Client.
4. Click on **List of parameters**.
5. The dialog for configuration is opened.
6. Configure the Client.
7. Close the dialog by clicking on **OK**.
8. Repeat the procedure for other Clients if necessary.

CLIENT LIST



| Parameters | Description |
|--------------------|---|
| Clients | Lists all available Clients. |
| Refresh | Updates the list of the Clients. |
| List of parameters | Opens the dialog for configuring the selected Client. |
| Close | Closes the dialog. |

CONFIGURE CLIENT



Modules that can be selected:

| Option | Description |
|---------------------------------------|--|
| Modules | <p>Selection of the modules which you want to configure.</p> <p>The list is made up of default modules and modules dependent on the respective client.</p> <p>General: General messages</p> <p>Net: Network messages</p> <p>Proxy: Messages of the zenon Proxy</p> <p>Db: Messages from ZenDbSrv</p> <p>SysSrv: Messages from ZenSysSrv</p> <p>Driver: Messages from a driver</p> <p>LOG: Messages from logging</p> <p>SAT:</p> <p>Licence: Messages from licensing service</p> <p>zenon Logic specific modules:</p> <p>General</p> <p>Licence</p> <p>Logic Studio messages</p> <p>VMTK/application</p> <p>Redundancy</p> <p>System</p> <p>Control</p> <p>Bus driver</p> <p>CAN bus</p> <p>TLS</p> |
| Messagelevel | Type of information which should be logged. |
| All | Selects all. |
| None | Deselects all. |
| Message Level for all Services | Assigns highlighted message levels to all services. |
| Max Buffered records | <p>Number of entries to be buffered if there is no connection to the Diagnosis Server.</p> <p>Default:256</p> |

| Option | Description |
|----------------|---|
| OK | Applies all changes and closes dialog. |
| Cancel | Discards all changes and closes the dialog. |
| Accept | Applies all changes. The dialog remains open. |
| Default values | Enters the defaults. |

11.1.6 Diagnosis Viewer - Analysis Program

The **Diagnosis Viewer** is used to display the LOG data. It connects to the **Diagnosis Server** in order to display data online or read back historic LOG files. LOG files contain not only the LOG data, additional information which is important for the analysis such as column headings are also saved in them.



The **Diagnosis Viewer** can also evaluate LOG data that has been created on a Linux operating system.

To display a LOG file:

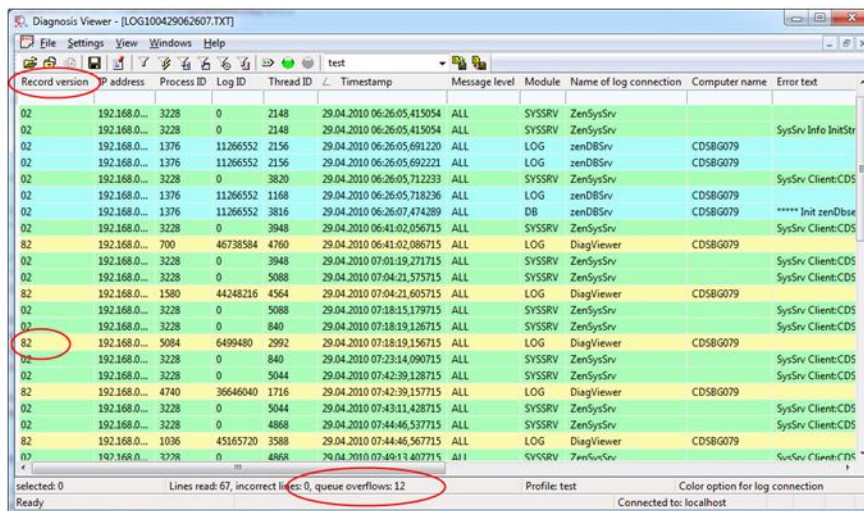
1. Select **File -> Open**.
2. the dialog for selecting a LOG file is opened with focus on the configured default folder.
3. Select the desired file.
4. The LOG file is displayed.
5. Double-click an entry to open the detail view.

SYSTEM MESSAGES IN THE DIAGNOSIS VIEWER

| Message | Description |
|--|---|
| The Service Engine (ID: xxxxx) is started after a previous crash! ID:xxxxx is the five-digit ID of Service Engine. | Is shown when Service Engine restarts after being unexpectedly ended. |

RECOGNIZING QUEUE OVERFLOW AT DRIVER

If messages of a driver are deleted because of queue overflow, the **Diagnosis Clients** and the **Diagnosis Server** set a marker in the new entry when writing a new entry for all activated services (on page 110) that older entries were deleted from the queue. The overflow recognitions contained in the opened LOG files are counted:



| Parameter | Description |
|-------------------------------------|---|
| Column Record version | This column must be part of the column selection. It shows the version of the data record. Version 8x tags overflows. |
| Counter 82 | 8 refers to overflow, 2 refers to the concerned version of the data record. |
| Status line: queue overflows | If state bar is active, the number of overflows is displayed there. |

Note: Not all entries written in the LOG file are displayed. If a not displayed LOG data record is tagged with an overflow, it will be displayed at the next visualized data record of this client. If several not displayed entries in a row are tagged with an overflow, the counter in the state bar can deviate from the number of data records with overflow tags.

11.1.6.1 Global settings

The entries are in the English language.

| Parameter | Description |
|-------------|--|
| File | Commands in menu File. |
| Open | Opens files in DVLOG or TXT format. Each newly opened LOG file is displayed in its own window. |

| Parameter | Description |
|--------------------------------|---|
| Open to active document | Each new LOG file is added to the active window. |
| Close | Closes the active window. |
| Save | Saves the LOG files of the active window. |
| Save as | Saves the current view of the active window (e.g. filter settings) to a file to be selected. |
| Remote Download | Only available, if a connection to a Remote Diagnosis Server exists. Enables the download of logging files of the Remote Server to the local LOG folder. A subdirectory with the name of the PC is created. Only file, which have changed or which are new, are available. |
| Connect to | Opens the dialog for the Connection selection (on page 95). |
| Online | <p>Activates the online error view.</p> <p>If online logging is started, all incoming entries are displayed. The same filter dialog as for reading files can also be set here.</p> <p>Difference: If no LOG connection is selected, all incoming LOG entries will be displayed, otherwise only the ones from the selected clients.</p> <p>If the filter of the LOG connection is modified, all entries not fulfilling the filter criteria will be lost. (Logging file nevertheless is created and all entries are saved.) Displayed entries can be saved.</p> |
| Offline | Deactivates the online error view. (Default) |
| Exit | Closes the Diagnosis Viewer . |

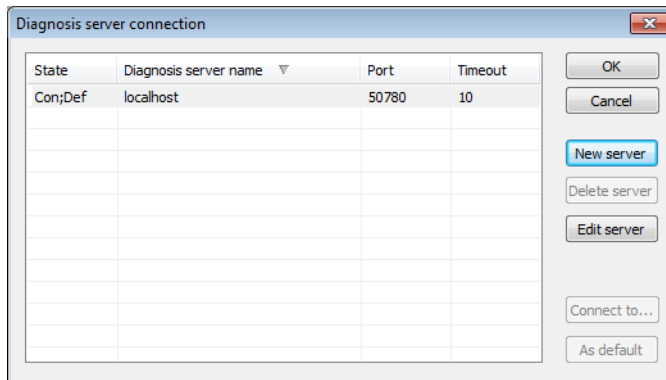
11.1.6.1.1 Connection settings Diagnosis Server connection

The **Diagnosis Viewer** automatically connects to a selected default Server at the start. If no default server is defined, **localhost** is used as default server.

Recommendation: Set up the server configuration using the entries in *zenon6.ini* (on page 87).

SELECT DIAGNOSIS SERVER

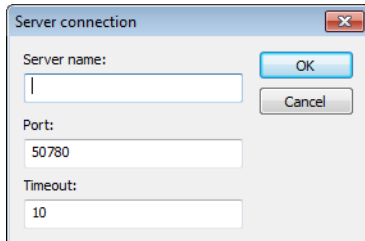
Click on **File -> Connect to...** to open the dialog to select a server:



| Parameter | Description |
|----------------------|---|
| List Server | Lists all configured Servers and displays them: State: Con: connected server Def: Default Server. This is shown on opening. Name Port Timeout |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards settings and closes the dialog. |
| New Server | Opens the dialog for configuring a new Server. |
| Delete Server | Selected Server entry is deleted from the list. |
| Edit Server | Opens the dialog for configuring the selected Server. |
| Connect to | Establishes a connection to the selected Server. |
| As default | Selected server becomes default server. |

CREATE AND EDIT DIAGNOSIS SERVER

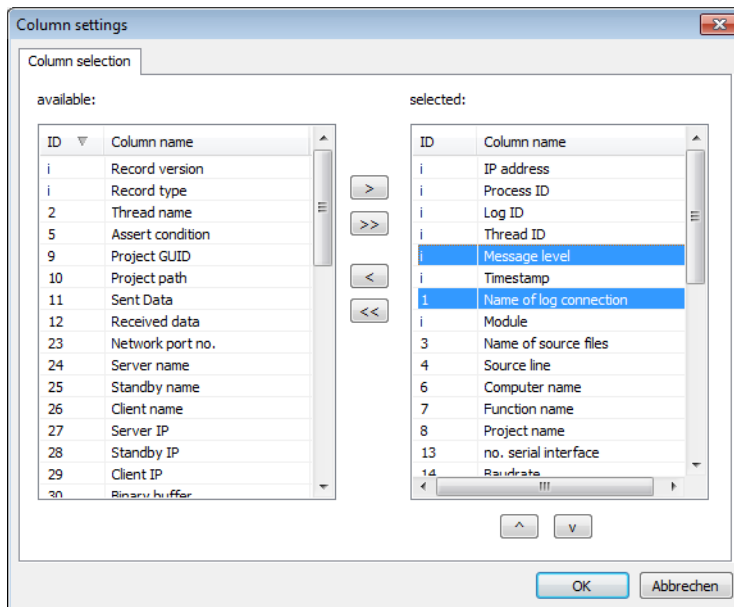
Click on **New Server** or **Edit Server** in dialog **Diagnosis Server connection** to open the dialog for configuring the Server:



| Parameter | Description |
|--------------------|---|
| Server name | <p>Name of the PC to which to connect. Each computer can only be entered as a server once.</p> <p>The following must run on the PC:</p> <p>up to version 6.51: zenSysSrv from version 7.00: zenLogSrv</p> |
| Port | <p>Port of the service on the target computer:</p> <p>up to version 6.51: <i>1101</i> From version 7.00: <i>50780</i></p> |
| Timeout | <p>Time in seconds to wait for a response from the Sysservice.</p> <p>Default: <i>10 s</i></p> |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards settings and closes the dialog. |

11.1.6.1.2 Column settings

You can select the columns that are to be displayed in the menu under **Settings -> Column settings**. The selection is only applicable for the time period in which the file is opened. The column settings are part of the filter profile.



| Parameter | Description |
|-----------|--|
| available | available columns |
| selected | Columns which are displayed |
| > | adds columns selected at "available" to "selected" |
| >> | adds all available columns at "available" to "selected" |
| < | removes selected columns from "selected" |
| << | removes all available columns from "selected" |
| ^ | sorts selected entries one level higher (multi-select is possible) |
| v | sorts selected entries one level lower (multi-select is possible) |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards settings and closes the dialog. |

Columns can also be configured via the context menu:

| Parameter | Description |
|----------------------|---|
| Add all columns with | Adds all columns which contain entries. |

| Parameter | Description |
|------------------------------|--|
| entry | |
| Remove Column | Hides the selected column. |
| Remove all empty columns | Hides all columns which do not contain entries. |
| Column width automatic | The width of the selected column is automatically adjusted to the longest entry. |
| All columns widths automatic | The width of all columns is automatically adjusted to the longest entry. |

11.1.7 Possibilities of Filtering

To define filters open the corresponding filter dialog via the corresponding symbol or the tab of the filter.

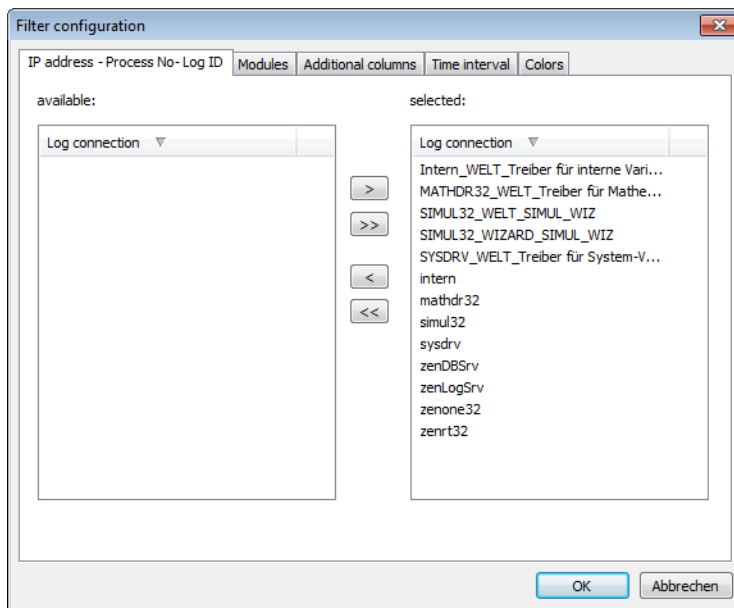
SYMBOL BAR FILTER

To use the symbol bar, you must activate it in menu **View** via menu item **Icon bar**.



| Symb ol | Tool tip | Description |
|------------|--|--|
| 1 | Change pre-filter settings | Opens dialog with five tabs for defining filters. |
| 2 | Change pre-filter for IP-ProcessID-LogID | Opens tab IP address - Process No - Log ID (on page 109). |
| 3 | Change pre-filter for Services | Opens tab Services (on page 110). |
| 4 | Change pre-filter for additional columns | Opens tab Additional columns (on page 111). |
| 5 | Change pre-filter for time interval | Opens tab Time interval (on page 112). |
| 6 | Change pre-filter for coloring | Opens tab Colors (on page 113). |

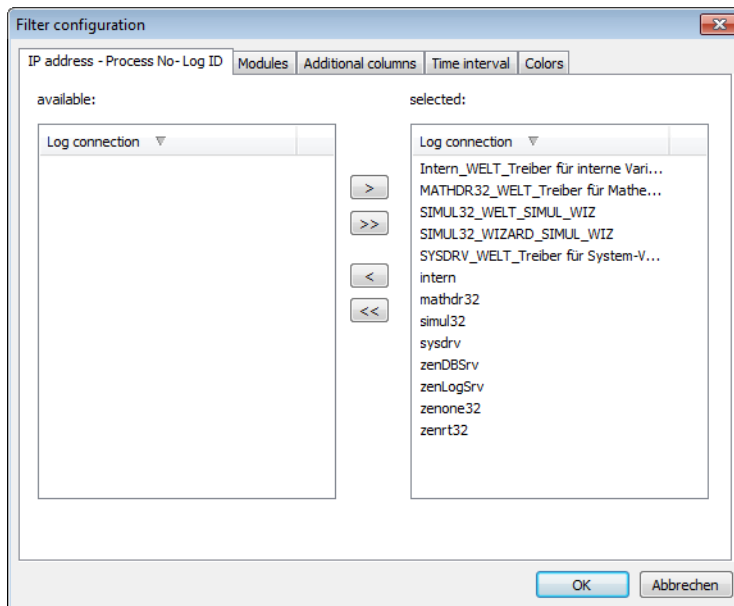
FILTER DIALOG



| Tabs | Description |
|---------------------------|---|
| IP-ProcessID-LogID | Opens tab IP address - Process No - Log ID (on page 109) for configuring the connections which should be logged. |
| Services | Opens tab Services (on page 110) for the services which should be logged. |
| Additional columns | Opens tab Additional columns (on page 111) for selecting additional columns which should be displayed. |
| Time interval | Opens tab Time interval (on page 112) for defining time filter. |
| Colors | Opens tab Colors (on page 113) for selecting the color-coding of information. |

11.1.7.1 IP address - Process No - LOG ID

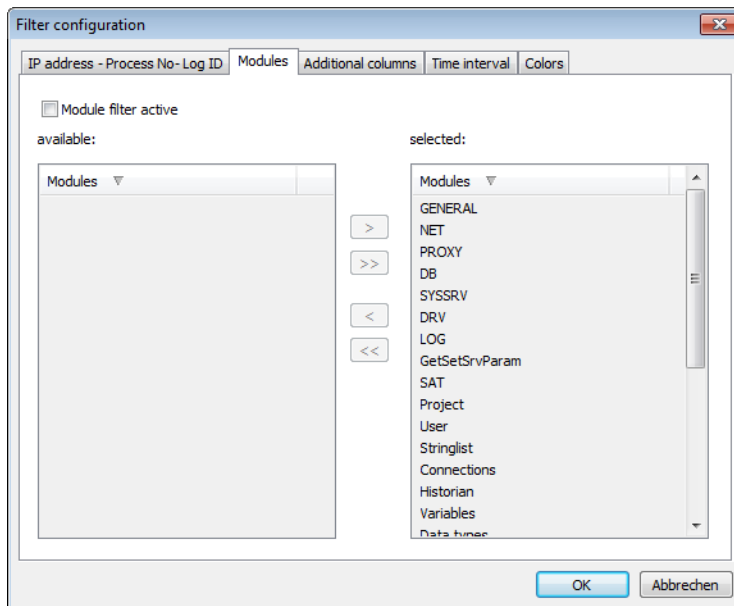
Configuration of the connections and processes which should be displayed.



| Parameter | Description |
|---------------------|---|
| available | List of available connections. |
| selected | List of selected connections. |
| <i>[Arrow keys]</i> | Add selected (>) or all (>>) connections to list selected or removes them from the list (< or <<). |
| OK | Applies all changes on all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

11.1.7.2 Services

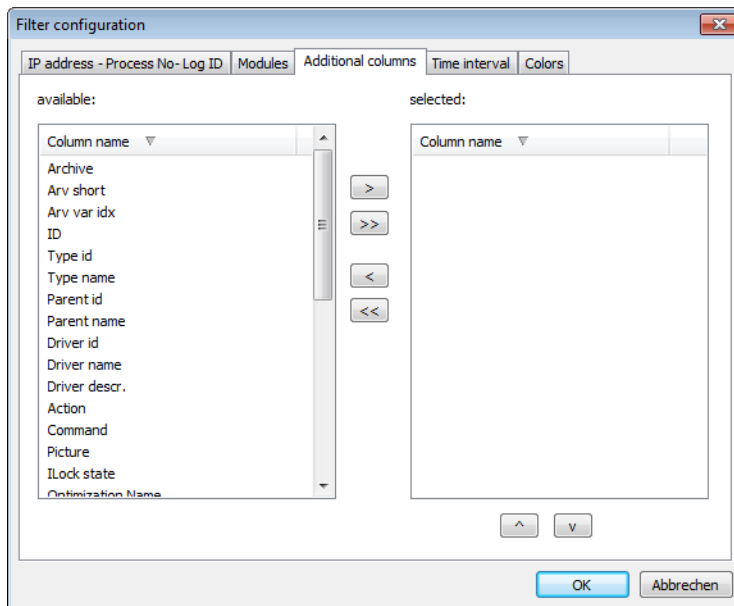
Selection of the services which should be displayed.



| Parameter | Description |
|------------------------------|--|
| Service filter active | Active: It is filtered on services. With this only LOG data records are displayed which are assigned to a selected service. |
| available | Available services. |
| selected | Selected services. LOG messages for the services listed here are displayed in the Diagnosis Viewer . |
| Arrow keys | Add selected services (>) or all services (>>) to the selected list or remove them from the list (< or <<). |
| OK | Applies all changes on all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

11.1.7.3 Additional columns

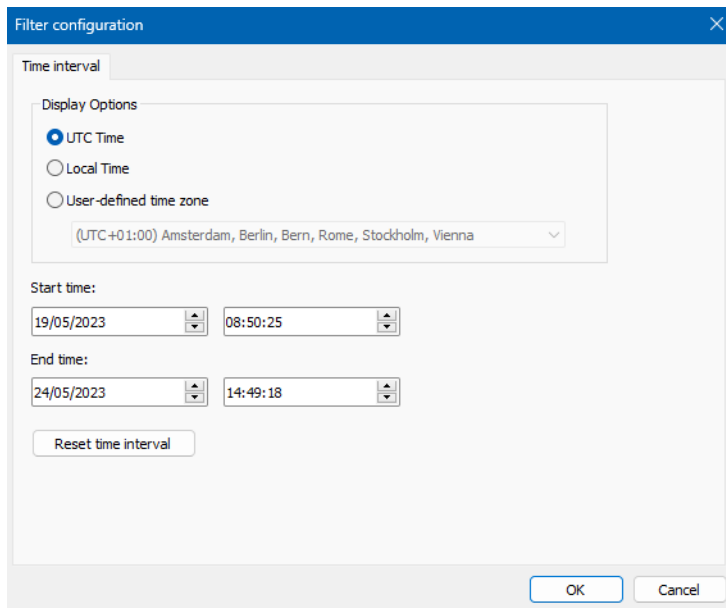
Selection of the columns which should be displayed additionally.



| Parameter | Description |
|-------------------|---|
| available | List of the available columns. All column names used in the log file are displayed. |
| selected | List of the selected columns. |
| Arrow keys | Add selected (>) or all (>>) column names to the selected list or remove them from the list (< or <<). |
| OK | Accepts all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

11.1.7.4 Time interval

Configuration of the time filter for displaying the entries.



The image shows a 'Filter configuration' dialog box with a 'Time interval' tab. Under 'Display Options', there are three radio buttons: 'UTC Time' (selected), 'Local Time', and 'User-defined time zone'. Below these is a dropdown menu showing '(UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna'. The 'Start time' section has two input fields: a date field set to '19/05/2023' and a time field set to '08:50:25'. The 'End time' section has two input fields: a date field set to '24/05/2023' and a time field set to '14:49:18'. There is a 'Reset time interval' button below the end time fields. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

Incident

1. Select the desired time zone by clicking in the radio button. You can choose between **UTC Time**, **Local Time** and a **User-defined time zone**.
2. Define the **Start time** and **End time** of a time interval by selecting the date and time in the drop-down list. If you have already selected a time zone, the time interval will be adjusted automatically.
3. Confirm your inputs by clicking on the **OK** button.

| Parameter | Description |
|-------------------------------|---|
| UTC Time | Universal Coordinated Time |
| Local Time | Local time |
| User-defined time zone | Time zone selection. Click in this radio button to select a time zone from the drop-down list. |
| Start time: | Selection of the date and point in time from which entries should be displayed. Default: Current date |
| End time: | Selection of the date and point in time up to which entries should be displayed. Default: Current date |

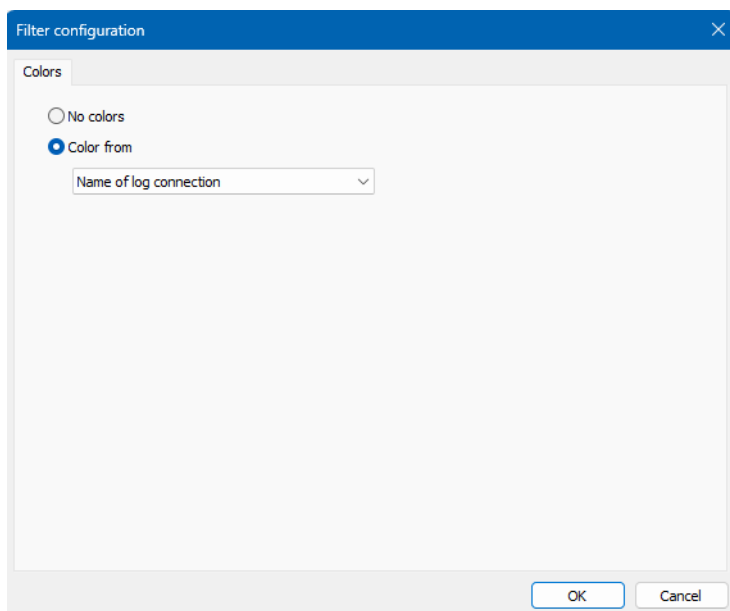
| Parameter | Description |
|---------------------|-------------------------------------|
| Reset time interval | Reset the time interval by default. |

CLOSE DIALOG

| Option | Description |
|--------|---|
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

11.1.7.5 Colors

Selection of the color display of the information. By default, the **Color from** radio button is selected with the **Name of log connection** color selection.



ALTERNATIVE COLOR SELECTION

1. Click on the arrow in the drop-down list to select an alternative color scheme.
2. Click on the **OK** button.

NO COLOR SELECTION

1. Click in the **No colors** radio button.
2. Then click on the **OK** button.

| Parameter | Description |
|-------------------|---|
| No colors | Entries are not highlighted in color. |
| Color from | Default setting. The drop-down list is active and a color scheme can be selected. |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

11.1.8 Reading the LOG files

One or more LOG files can be opened in an analysis at the same time. A pre-filter (on page 107) has to be set to limit the display. This is possible with five property pages. This filter can be modified later on. If the filter is set, only the entries fulfilling these filter criteria are displayed. The entries are listed chronologically.

FILTER COLUMNS

Another filter possibility is available with the filter columns. Filter criteria can be entered for each column in the input field below the column header. The fields support **Regular Expressions**, so that also complex filter criteria can be defined. The list can be sorted ascending or descending by clicking the column headers. Displayed entries can be saved. Fields to be displayed can be selected using the **Settings -> Column settings** menu entry.

DEFAULT FIELDS IN THE LOG FILE:

| ID | Parameter | Description |
|----|----------------------|--|
| i | <i>IP address</i> | IP address. These fields identify the clients and allow the message to be assigned. |
| i | <i>Log ID</i> | Entry ID. These fields identify the clients and allow the message to be assigned. |
| i | <i>Message Level</i> | Name of the message level for which the message was entered. |
| i | <i>Services</i> | Name of the service which entered the message. |

| ID | Parameter | Description |
|----|-----------------------|---|
| i | <i>Process ID</i> | ID of the project. These fields identify the clients and allow the message to be assigned. |
| i | <i>Record type</i> | Type of entry. |
| i | <i>Record version</i> | Version number of the entry. |
| i | <i>Thread ID</i> | ID of the thread, from which the message was entered. |
| i | <i>Timestamp</i> | Time of the message in UTC. |

OPTIONAL FIELDS WITH FIX ID:

| ID | Constant | Description |
|----|-------------------------------|---------------------------------|
| 1 | <i>Name of log connection</i> | Name of logging connection. |
| 2 | <i>Thread name</i> | Name of the threads. |
| 3 | <i>Name of source files</i> | Name of the source files. |
| 4 | <i>Source line</i> | Source line. |
| 5 | <i>Assert condition</i> | Assert condition. |
| 6 | <i>Computer name</i> | Computer name. |
| 7 | <i>Function name</i> | Function name. |
| 8 | <i>Project name</i> | Project name. |
| 9 | <i>Project GUID</i> | GUID of the project. |
| 10 | <i>Project path</i> | Project path. |
| 11 | <i>Sent Data</i> | Sent data. |
| 12 | <i>Received data</i> | Received data. |
| 13 | <i>no. serial interface</i> | Number of the serial interface. |
| 14 | <i>Baudrate</i> | Baud rate. |
| 15 | <i>dtr setting</i> | DTR setting. |
| 16 | <i>rts setting</i> | RTS setting. |

| ID | Constant | Description |
|----|---------------------------------|-----------------------------|
| 17 | <i>Serial char. length</i> | Serial character length. |
| 18 | <i>Parity</i> | Parity. |
| 19 | <i>No. stopbits</i> | Number of stop bits. |
| 20 | <i>CTS</i> | CTS. |
| 21 | <i>dsr</i> | DSR. |
| 22 | <i>dsr sensitivity</i> | DSR sensitivity. |
| 23 | <i>Network port no.</i> | Port number in the network. |
| 24 | <i>Server name</i> | Server name. |
| 25 | <i>Standby name</i> | Name of standby server. |
| 26 | <i>Client name</i> | Client name. |
| 27 | <i>Server IP</i> | IP address server. |
| 28 | <i>Standby IP</i> | IP address standby. |
| 29 | <i>Client IP</i> | IP address client. |
| 30 | <i>Binary buffer</i> | Binary buffer. |
| 31 | <i>Pointer</i> | Pointer. |
| 32 | <i>Class name</i> | Class name. |
| 33 | <i>Error code</i> | Error code. |
| 34 | <i>DLL instance handle</i> | DLL instance handle. |
| 35 | <i>DLL name</i> | DLL name. |
| 36 | <i>Driver error parameter 1</i> | Driver error parameter 1. |
| 37 | <i>Driver error parameter 2</i> | Driver error parameter 2. |
| 38 | <i>Trace Message</i> | Trace message. |
| 39 | <i>Errortext</i> | Error text. |
| 40 | <i>Error file name</i> | Name of error file. |
| 41 | <i>Success condition</i> | Condition for success. |
| 42 | <i>Value if successful</i> | Value when successful. |

| ID | Constant | Description |
|----|----------------------------------|---|
| 43 | <i>Net adress</i> | Net address. |
| 44 | <i>Datablock</i> | Data block. |
| 45 | <i>Offset</i> | Offset. |
| 46 | <i>Bit number</i> | Bit number. |
| 47 | <i>Area in PLC</i> | Area in the PLC. |
| 48 | <i>Communication direction</i> | Shows the direction of the communication in a string. |
| 49 | <i>General text</i> | General text. |
| 50 | <i>Main version no.</i> | Number of main version. |
| 51 | <i>Sub version no.</i> | Number of sub-version. |
| 52 | <i>Build no.</i> | Build number. |
| 53 | <i>Servicepack</i> | Service Pack. |
| 54 | <i>Hotfix no.</i> | Hotfix number. |
| 55 | <i>Sending client</i> | Client, which sent the command. |
| 56 | <i>Target client for command</i> | Client that is the target of the command. |
| 57 | <i>Database no.</i> | Number of database. |
| 58 | <i>Datapoint no.</i> | Data point number (channel number). |
| 59 | <i>Datapoint value</i> | Value of data point. |
| 60 | <i>Datapoint status</i> | Status of data point. |
| 61 | <i>Datapoint timestamp</i> | Time stamp of data point in seconds. |
| 62 | <i>Duration in ms</i> | Error wait time in milliseconds. |
| 63 | <i>Number, counter</i> | number, counter. |

11.1.9 Structure of the LOG file

LOG files are ANSI text files. They are saved in *** dvlog** format. The individual fields are separated using tab characters. **CR+LF** is used as an end character. These files can be opened in a text editor.

LOG file get the information sequentially, not sorted chronologically.

11.1.9.1 Message levels

Eight groups can be selected to divide the log messages. These are bit coded and can thus also be combined.

| No. | Message level |
|-----|------------------|
| 1 | Error messages |
| 2 | Warnings |
| 4 | Success messages |
| 8 | TRACE |
| 16 | ASSERT |
| 32 | LOG messages |
| 64 | Debug |
| 128 | Extended Debug |

11.1.9.2 Search function

The current window can be searched using **View/Find**. All hits are marked.

11.1.9.3 Profiles

Column settings can be saved as profiles.

To save profiles:

1. Enter a name into the field in the toolbar.
2. Click on the symbol with the disk.

To load profiles:

1. Select a saved profile from the drop-down list.
2. Click on the symbol with the disk.

The profiles are saved as a ***.lvs** file.

11.1.10 Handling of errors and messages for the Diagnosis Viewer

ERROR

| Error | Possible causes |
|--|---|
| <i>The port cannot be opened.</i> | <p>Another application is using the port. Check via "netstat".</p> <p>The ports for the entries [SYS_REMOTE] CONFIG and [LOGGING_SYSTEM] CONFIG are identical. zenLogSrv and zenSysSrv then try to open the same port.</p> |
| Diagnosis Clients do not start the zenLogSrv . | <p>zenAdminSrv was ended. Without it the service cannot be started.</p> <p>zenLogSrv is not registered as a service at the PC. In this case, enter in the command line: zenLogSrv.exe -Service</p> <p>Diagnosis Clients are not of version 7.00 SP0 or higher. The zenLogSrv is only supported from this version on.</p> |
| <i>Several processes crash.</i> | <p>Compatibility problem. The components of the Diagnosis Viewer (Diagnosis Server and Diagnosis Viewer) are used on various clients in different versions which are outdated and not compatible with each other.</p> <p>Make sure that you use the current components on all computers.</p> |

LOG ENTRIES

| Entry | Description |
|---|---|
| <i>SysSrv received not supported network message!</i> | <p>zenSysSrv received a network telegram which is not supported.</p> <p>Example: LOG entries.</p> |
| <i>LogSrv received not supported network message!</i> | <p>zenLogSrv received a network telegram which is not supported. Example: Remote Transport commands.</p> |

| Entry | Description |
|---|---|
| <i>Could not open listening port. Server will be stopped.</i> | zenLogSrv or zenSysSrv could not open its listening port. The error message is logged as follows: zenLogSrv and zenSysSrv on the PC: Entry in the Windows event display. |

The following LOG entries are assigned to different systems. The first part of the messages states whether service or Client are effected:

SysSrv: **zenSysSrv**

SysCli: Client for **zenSysSrv**

LogSrv: **zenLogSrv**

LogCli: Diagnosis Client

| Entry | Description |
|---|--|
| <i>[SysSrv/LogSrv/SysCli/LogCli] Info InitString [String]</i> | A network connection has been initialized with the displayed configuration string. Server opens ports and Clients connect to the Server. |
| <i>[SysSrv/LogSrv/SysCli/LogCli] WINSOCK ERROR</i> | An exception occurred during a network operation. The details are also displayed. |
| <i>[SysSrv/LogSrv] Accept Failed!</i> | An incoming connection from a Client could not be accepted. |
| <i>[SysSrv/LogSrv/SysCli/ LogCli] Write Faild</i> | Not all data which should be sent could be sent. The number of the sent bytes and the number of the bytes which should be sent is displayed. |
| <i>[SysSrv/LogSrv] Client [String] in List Delete!</i> | The Client logged off from the Server. |
| <i>[SysSrv/LogSrv] Client [String] in List Insert</i> | The Client logged on to the Server. |

11.2 Report Engine error messages in general

REPORT LAUNCHER

GENERAL

| Message | Description |
|---|--|
| Javascript error message: Error 500 | Possible cause: Variable name contains two or more consecutive spaces. |

REPORT LAUNCHER LOG

| Entry | Level | Description |
|---|--|--|
| Application_Error: [Fehlerinformationen] | <i>ERRORS</i> | An error has triggered the ASP.Net application error event. |
| Report Launcher Application Start | <i>DEBUG</i> | The ASP.Net web application is being started up. |
| Application_AuthenticateRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL] | <i>DEEPDEBUG</i> | An authentication query was received. |
| Application_BeginRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL] | <i>DEEPDEBUG</i> | An HTTP query was received. |
| Application_EndRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL] | <i>DEEPDEBUG</i> | An HTTP query was handled. |
| TRACE for [Komponente]: [Meldung] | Depending on the trace level: <i>ALL</i> <i>ERRORS</i> <i>WARNINGS</i> <i>DEBUG</i> <i>DEEPDebug</i> | A trace message was received. |
| WebService method „[Methode]“ called with [Parameterliste] | <i>DEEPDEBUG</i> | A WebService method of the Reporting Services Web Service end points is being called up. |

| Entry | Level | Description |
|---|--|---|
| WebService method „[Methode]“ returned [Rückgabewert] | DEEPDEBUG | A WebService method of the Reporting Services Web Service end points has provided a return value. |
| WebService method „[Methode]“ returned [Rückgabewert] and set [Output-Parameterliste] | DEEPDEBUG | A WebService method of the Reporting Services Web Service end points has provided a return value and set an output parameter. |
| Eventlog entry for [Eventlog-ID]: [Meldung] | Depending on the event log type: ERRORS WARNINGS DEBUG DEEPDebug | An event log message was received. |
| Exception caught in method „[Methodenname]“ of type „[Klassenname inklusive Namespace]“: [Exception-Dump] | ERRORS | An exception was caught. |

REPORTING STUDIO

All messages of the output window are sent to the zenLogSrv.

CONNECTOR CONTAINER

All message box messages that lead to the zrsConnector.exe process being ended are logged as **ERRORS**. In addition, the following messages are saved:

| Entry | Level | Description |
|--|--------|--|
| The logging connection could not be established! | ERRORS | Log connection could not be established. |
| The logging functions could not be loaded! | ERRORS | The necessary functions could not be loaded from the DLLs. |
| The logging helper DLL could not be loaded! | ERRORS | The necessary DLLs could not be loaded. |
| Client [IP-Adresse & Port] | DEBUG | Client connection was accepted or handled. |

| Entry | Level | Description |
|--|--------|--|
| [accepted/processed] | | |
| Using connector version [Version] | DEBUG | Version number was set for a query. |
| The required connector „[Connector]“ could not be loaded. Errorcode=[HEX-Fehlercode], Errortext=[Fehlertext] | ERRORS | The requested connector could not be loaded. |
| The required connector „[Connector]“ has been loaded. | DEBUG | The requested connector was loaded. |
| zenonV6: Query for [Anfragetyp] received | DEBUG | Receive query. |
| zenonV6: Query for [Anfragetyp] resulted in error. Errorcode=[HEX-Fehlercode], Errortext=[Fehlertext] | ERRORS | Query has triggered an error. |
| zenonV6: Query for [Anfragetyp] processed | DEBUG | Query has been handled successfully. |
| zenonV6: Query shift is not supported | ERRORS | Query not supported. |
| zenonV6: Query type is not supported | ERRORS | Query not supported. |

ZRSLICSRV

All entries that were previously sent to EventLog are logged. *ERRORS* are only sent to EventLog, unless **EXTENDEDLOG** is set in **zenAnalyzer.ini**. This flag has no effect on the sending of messages to the **zenLogSrv**.

| Entry | Level | Description |
|--|--------|--|
| Client [IP-Adresse & Port] [accepted/processed] | DEBUG | Client connection was accepted or handled. |
| The logging connection could not be established! | ERRORS | Log connection could not be established |
| The logging functions could not be loaded! | ERRORS | The necessary functions could not be loaded from the DLLs. |
| The logging helper DLL could not be loaded! | ERRORS | The necessary DLLs could not be loaded. |

| Entry | Level | Description |
|--|--------------|---|
| Command [Kommando mit Parametern] has been processed. | <i>DEBUG</i> | A query was processed. (this message is written by every query type) |
| Deprecated command [Kommando mit Parametern] has been processed. | <i>DEBUG</i> | An obsolete inquiry was received and responded to with "negative" (always negative, because it is an obsolete inquiry). |

ZRSPROVIDER

The following new log messages have been added:

| Entry | Level | Description |
|--|---------------|--|
| The cryptographic service provider could not be initialized! | <i>ERRORS</i> | Provider for hash could not be initialized |
| Reading the hash data failed! | <i>ERRORS</i> | Reading of hash data failed. |
| The data could not be hashed! | <i>ERRORS</i> | Data hashing failed. |
| The hash object could not be created! | <i>ERRORS</i> | Hash object could not be created. |
| The cryptographic service provider is not usable! | <i>ERRORS</i> | Provider for hash cannot be used. |
| Domain [Name] released. | <i>DEBUG</i> | Domain approved |
| Reading data for [domain/project] [Name]. | <i>DEBUG</i> | Start of loading of data for the domain or project |
| Datasource could not be opened. Errorcode=[HEX-Fehlercode] | <i>ERRORS</i> | Data source could not be opened. |
| Session not be opened. Errorcode=[HEX-Fehlercode] | <i>ERRORS</i> | Session could not be opened. |
| [Anzahl] [Objekttyp] read. | <i>DEBUG</i> | Read object data from database. |
| [Objekttyp] data could not be read. Errorcode=[HEX-Fehlercode] | <i>ERRORS</i> | Object data could not be read from the database. |
| Reading data for [domain/project] [Name] completed. | <i>DEBUG</i> | Loading of data for domain or project completed. |
| The logging connection could not be established! | <i>ERRORS</i> | Log connection could not be established |
| The logging functions could not be | <i>ERRORS</i> | The necessary functions could not be loaded from |

| Entry | Level | Description |
|--|---------------|--|
| loaded! | | the DLLs. |
| The logging helper DLL could not be loaded! | <i>ERRORS</i> | The necessary DLLs could not be loaded. |
| Socket could not be created. Errorcode=[Fehlercode] | <i>ERRORS</i> | The network connection could not be opened. |
| Both server and standby server for the project could not be reached. | <i>ERRORS</i> | A connection could not be established to either the Server or the Standby (if defined). |
| Connecting to [IP-Adresse & Port] | <i>DEBUG</i> | Connection establishment |
| Connecting to [IP-Adresse & Port] failed | <i>ERRORS</i> | Connection Failed |
| There was no response to the initialization request. | <i>ERRORS</i> | Initialization query remained unanswered. |
| Using connector version [Version] | <i>DEBUG</i> | Connection version handled. |
| There was no response to the query. | <i>ERRORS</i> | Query remained unanswered. |
| Query [Anfragetyp]: [Parameterliste] | <i>DEBUG</i> | Receive query. |
| Invalid call: [Fehlerinformation] | <i>ERRORS</i> | Invalid query. |
| Connector error: [Fehlerinformation] | <i>ERRORS</i> | Error during communication with the connector container or the connector container has reported an error when editing the query. |
| Unexpected connector error: [Fehlerinformation] | <i>ERRORS</i> | An exception has occurred. |
| Query [Anfragetyp] processed: [Anzahl] result rows returned. | <i>DEBUG</i> | Query completed successfully and data restored. |