zenon Analyzer manual

Report Launcher

v.3.30

COPA-DATA

Contents

1 Welcome to zenon Analyzer help

PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at support@copadata.com.

LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email sales@copadata.com.
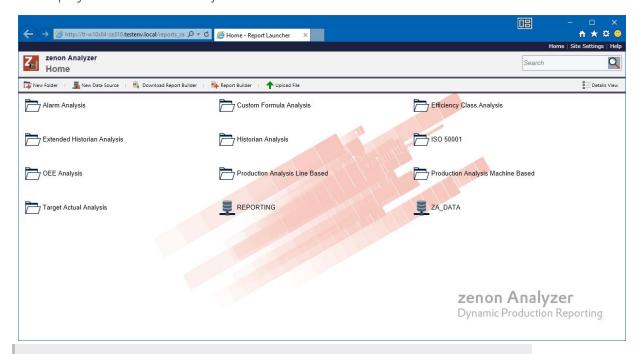
2 Report Launcher

Reports display data from online sources or archives according to defined rules. zenon Analyzer is shipped with prepared report templates which 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. 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 zenon Analyzer is started.

☀ Information

Only reports that are included in the scope of the zenon Analyzer license that has been purchased are displayed.

CONFIGURATION OF REPORTS

Reports can be configured in the browser.

The settings are made in ZAMS - zenon Analyzer Management 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**
>
> Only archive data with variables from its own project can be evaluated.
>
> This means: For example, in an integration project, if a variable from a subproject is archived in an archive, then zenon Analyzer cannot access this variable.

3 Rights management

The zenon Analyzer 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 done by the zenon Analyzer but by the operating system.

User rights are set and administered in the ZAMS.

4 Report Launcher: Configuration and operation

The zenon Analyzer is called up via the web browser or started via the ZAMS:

▸ 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 ZAMS:
The following actions start the web browser with the Report Launcher for the connection set up in ZAMS:

  ▸ Selection of the corresponding command from the **Report** menu

  ▸ Click on the corresponding symbol in the toolbar

  ▸ Click on the **Open report in the Report Launcher** button in a report in the ZAMS

> 💡 **Information**
>
> Internet Explorer 10 (with compatibility view deactivated) or higher, Firefox or Google Chrome can be used as a browser.
>
> When starting the Report Launcher or opening reports in the Report Launcher, Internet Explorer is addressed by ZAMS directly as ActiveX.

REPORT LAUNCHER

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

▸ configure the Report Launcher

▸ To configure and call up reports

The Report Launcher can be called up in two views:

▸ Tile view (on page 9)

▸ Detail view (on page 11)

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 the Report Launcher. For example, if Runtime 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.

BROWSER

zenon Analyzer is called up using a browser.

> ### 💡 Information
>
> zenon Analyzer was designed and tested for the following browsers:
>
> ▸ Microsoft Internet Explorer from version 10
>
> ▸ Chrome
>
> ▸ Firefox
>
> **Note:**
>
> ▸ Compatibility view must be deactivated for Internet Explorer.
>
> ▸ Zoom is only available for the Chrome browser.
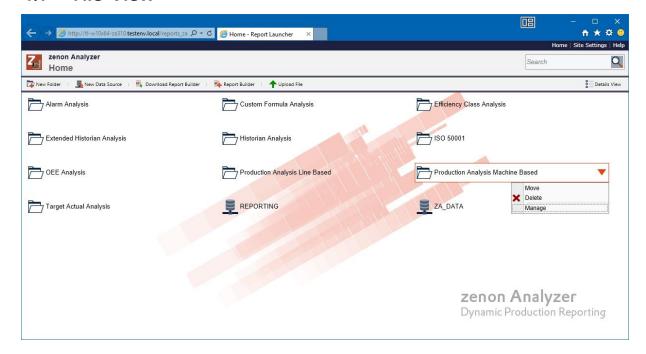
▸

4.1 Tile View

CONFIGURATION MENU

Option	Description
Home	Switches to the highest level.
Site Settings	Opens the administration (on page 49) of general settings of the site.
Help	Opens the online-help for the Report Launcher.

Option	Description
Search field	Search in the Report Launcher. Entry of the search term in the search field. Click on the **magnifying glass** symbol to start the search. **Note:** Clicking on the symbol does not trigger any action in Firefox or Chrome. Instead, press the **Enter** key.

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	Opens the Microsoft Report-Builder (on page 59). Requirement: The Microsoft Report-Builder must already be present on the system. Note: Is not supported by Chrome or Firefox.
Upload file	Opens the dialog for uploading resources (on page 57) such as reports, models, data sets, etc.
Details view - Tile view	Switches from **detail view** to **symbol view**. **Tile view**: Shows all folder and reports in a compact view. In this view folders can be hidden (on page 54). **Detail View:** Shows details on reports and folders and allows them to be sorted by clicking on the respective header: ▸ Object type (2nd column) ▸ Name ▸ Description ▸ Last run ▸ Modified Date
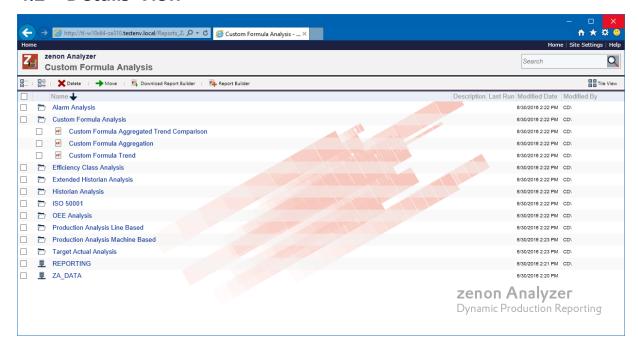
Option	Description
	▸ Modified By Both views provide a context menu (on page 14) with frequently-required commands for folders, reports and databases.

LIST FIELD REPORTS

Option	Description
List field Reports	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. Reports for configuration and display are selected here.

4.2 Details View

CONFIGURATION MENU

Option	Description
Home	Switches to the highest level.

Option	Description
Site Settings	Opens the administration (on page 49) of general settings of the site.
Help	Opens the online-help for the Report Launcher.
Search field	Search in the Report Launcher. Entry of the search term in the search field. Click on the **magnifying glass** symbol to start the search. **Note:** Clicking on the symbol does not trigger any action in Firefox or Chrome. Instead, press the **Enter** key.

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	Opens the Microsoft Report-Builder (on page 59). Requirement: The Microsoft Report-Builder must already be present on the system. Note: Is not supported by Chrome or Firefox.
Tile View	Switches from **detail view** to **symbol view**. **Tile view**: Shows all folder and reports in a compact view. In this view folders can be hidden (on page 54).

| Option	Description
	Detail View: Shows details on reports and folders and allows them to be sorted by clicking on the respective header:
	▸ Object type (2nd column)
	▸ Name
	▸ Description
	▸ Last run
	▸ Modified Date
	▸ Modified By
	Both views provide a context menu (on page 14) with frequently-required commands for folders, reports and databases.

LIST FIELD REPORTS

Option	Description
List field Reports	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.
	Reports for configuration and display are selected here.

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 49)

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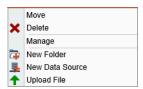
The context menu of folders contains different commands, regardless of the Report Launcher view.

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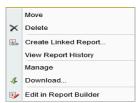
Command	Description
Move	Opens dialog (on page 16) for selecting the new saving location.
Delete	Deletes selected folder.
Manage	Opens the dialog for managing (on page 57) the folder.
New folder	Opens dialog to create a new folder.

Command	Description
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.

Option	Description
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

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 thea saving location on the local computer.

4.7   Languages and time formats

USER INTERFACE LANGUAGE

The zenon Analyzer 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

▶   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.

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 minute, **DSTstart** + 1 hour) ▸ Interval in **UTC**: 1 minute	▸ Interval in local time: **DSTend** *-1* 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

<u>Key:</u>

- ▸ **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.

By clicking button **View report**, the parameters are sent to the zenon Analyzer. 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

At the data transmission between browser and Analyzer 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 the zenon Analyzer:

Entry	Limitation
Value available	A value must have be entered or selected. This validation is always carried out before sending the parameter to the zenon Analyzer server.
String validation	For parameters of data type **Text** no additional validations are carried out.
Boolean validation	For parameters of data type **Bool** the value must be either *true* or *false*. Capitalization/use of small letters is not checked. Comment: The Boolean selection dialog (on page 21) sends valid values but at the direct control of the zenon Analyzer via URLs the validation may be needed.
Integer validation	For parameters of data type **Integer** the value must not contain another character as the following: ▶ 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.

Entry	Limitation
	All included thousands separator are removed at the beginning of the integer validation.
Float validation	For parameters of data type **Float** the value must not contain another character as the following: ▸ 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 thousand separators that are included are removed at the beginning of the integer validation. ▸ 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. **Note:** No numbers in front of and after the decimal separator is not allowed.
Date and time validation	For parameters of data type **date and time** the following criteria must be adhered to: ▸ The value of the parameter must correspond to a valid date and time format of the culture of the user. ▸ The numbers in date and time must be able to be assigned to a valid value. For example, the character string *45.18.2011 35:68:99* is invalid as there is no such date or time. ▸ If the character string does not contain a time, *00:00:00* is assumed. ▸ The time is rounded to minutes. If a time contains seconds, it is rounded to the preceding minute if the value is smaller the *30*. For values larger or equal to *30* it is rounded to the next minute. The rounding considers jumps for minutes, hours, days, months and years. ▸ The rounded result must lie within the following limits: Minimum = *1.1.1900 00:00:00* Maximum = *1.1.[current year + 10] 00:00:00* The maximum corresponds to the end of the year 10 years from the current date.

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 zenon Analyzer 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*

Default ● True ○ False
Label ● JA ○ NEIN
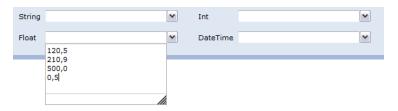
4.8.3 Input or selection of several values

INPUT SEVERAL VALUES

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

String ▼ Int ▼
Float ▼ DateTime ▼
120,5
210,9
500,0
0,5|

To enter values:

1. Click on the input field.
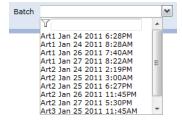
   The input field is opened.

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.

Batch ▼
Art1 Jan 24 2011 6:28PM
Art1 Jan 24 2011 8:28AM
Art1 Jan 26 2011 7:40AM
Art1 Jan 27 2011 8:22AM
Art2 Jan 24 2011 2:19PM
Art2 Jan 25 2011 3:00AM
Art2 Jan 25 2011 6:27PM
Art2 Jan 26 2011 11:45PM
Art2 Jan 27 2011 5:30PM
Art3 Jan 25 2011 11:45AM

To select a value:

1. Click on the input field.

   The input field is opened.
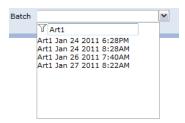
2.   Filter the entries or select a value.

3.   Click next to the input field.
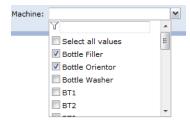
The input field is closed. The value is displayed in the input field.

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

Batch

Art1

Art1 Jan 24 2011 6:28PM
Art1 Jan 24 2011 8:28AM
Art1 Jan 26 2011 7:40AM
Art1 Jan 27 2011 8:22AM

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.

Machine:

Select all values
☑ Bottle Filler
☑ Bottle Orientor
☐ Bottle Washer
☐ BT1
☐ BT2
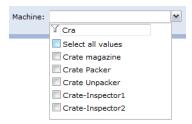
To select several values:

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 24): Selection of the year

▶ **Month** (on page 25): Selection of the month

▶ **Day** (on page 26): 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	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. Click on: ▸ Arrow left: Switches to the previous decade. ▸ Arrow right. Switches to the subsequent decade. In view 1900 - 1910 you cannot navigate to the previous decade.
Selection of year	The selected year is displayed in bold. If there is no value set, the current year is displayed in bold. 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**.
Beginning of the year	▸ *Active*: *January 1st*, 00:00:00 is configured as the day and time.January, *00:00:00* is configured as the day and time.
End of the year	▸ *Active*: *January 1st* of the subsequent year, *00:00:00* is configured.

4.8.4.2 Month

Selection of a month for display in the report.

SELECTION OF MONTH

Option	Description
Header	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. Click on: ▸ Arrow left: Switches to the previous year.

Option	Description
	▶ Arrow right. Switches to the following year.
	▶ Year: Opens the dialog to select the year (on page 24).
Selection of month	The selected month is displayed in bold. If there is no value, the current month is displayed in bold.
	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**.
Beginning of the month	▶ *Active*: The first day of the month, *00:00:00*, is configured as the day and time.
End of the month	▶ *Active*: The first day of the following month, *00:00:00*, is configured as the day and time.

4.8.4.3 day

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

SELECTION OF DAY

Option	Description
Header	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.
	Click on:
	▶ Arrow left: Switches to the previous month.
	▶ Arrow right. Switches to the following month.
	▶ Year: Opens the dialog to select a month (on page 25).
Selection of day	The selected day is displayed in bold. If there is no value, the current

Option	Description
	day is displayed in bold.
	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**.
Beginning of the day	▶ *Active*: 00:00:00 is configured as a time.
End of the day	▶ *Active*: 00:00:00 of the following day is configured as a time.

4.8.4.4 Hours

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

SELECTION OF DAY

Option	Description
Header	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.
	Click on:
	▶ Arrow left: Switches to the previous month.
	▶ Arrow right. Switches to the following month.
	▶ Year: Opens the dialog to select a month (on page 25). The header can be used for date navigation:
Selection of day	The selected day is displayed in bold. If there is no value, the current day is displayed in bold.
	Clicking on a day accepts the day as a time point and opens

Option	Description
	the dialog to select an hour.
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	The time is selected by means the drop-down list. 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). Minutes are displayed as *00* and cannot be changed.
00:00 means the end of the day	*Active*: 00:00 is interpreted as the end of the day.
Back	Opens month view for navigation of dates.
Accept	Applies settings and closes the dialog. To cancel the input, click on the calendar symbol next to the input field.

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	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):
	▸ The first (left) drop-down list is for selecting the hour. 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.
	▸ 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).
00:00 means the end of the day	▸ *Active*: *00:00* is interpreted as the end of the day.
Back	Opens month view for navigation of dates.
Accept	Applies settings and closes the dialog.

Option	Description
	To cancel the input, click on the calendar symbol next to the input field.

12-HOUR TIME FORMAT

Parameter	Description
Header	A click on the header opens the month view to navigate dates.
Entry of time	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):
	‣ The first (left) drop-down list is for selecting the hour. 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.
	‣ 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).
	‣ AM: Morning (ante meridiem)
	‣ PM: Afternoon (post meridiem)
12:00 AM means end of the day	*Active*: 12:00 AM is interpreted as the end of the day.
Back	Opens month view for navigation of dates.
Accept	Applies settings and closes the dialog.

Parameter	Description
	To cancel the input, click on the calendar symbol next to the input field.

4.8.5 Time span

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

To configure a time period:

1. Select the end time
    The possibilities for selection available depend on the report:

    ▸ **Year** (on page 32)

    ▸ Month (on page 33)

    ▸ **day** (on page 35)

    ▸ **Hour** (on page 36)

    ▸ **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.

Option	Description
End of the interval	Definition of the end time.
	Minutes and hours are always set to *0*, days are always set to 1. January. These elements cannot be configured.
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	▸ *Active*: The end time is *00:00* on January 1 of the selected year.
End of the year	▸ *Active*: The end time is *00:00* on January 1 of the following year.
Interval definition	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. Fixed setting: *Years*
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.

Option	Description
	▸ **To**: End of the interval. Display only.
Accept	Click on this button to accept the inputs, if they are valid, and close the dialog.
	Time stamp is converted to UTC.
	To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.

4.8.5.2 Month

ENTRY OF THE TIME RANGE IN MONTHS.

Option	Description
End of the interval	Definition of the end time.
	Minutes and hours are always set to *0*, days are always set to 1. These elements 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.
Beginning of the month	▸ *Active*: The end time is *00:00* on the first day of the selected month.
End of the month	▸ *Active*: The end time is *00:00* on the first day of the following month.

Option	Description
Interval definition	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 of years or months.
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.
Accept	Click on this button to accept the inputs, if they are valid, and close the dialog. Time stamp is converted to UTC. To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.

4.8.5.3 day

ENTRY OF THE TIME RANGE IN DAYS.
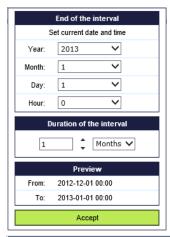
Option	Description
End of the interval	Definition of the end time. Minutes and hours are always set to *0* and cannot be configured.
Set current date and time	Set the current time stamp when clicked.
Year	Input of year. Select from drop-down list.
Month	Input of month. Select from drop-down list.
day	Input of day. Select from drop-down list.
Beginning of the day	▸ *Active*: The end time is *00:00* on the selected day.
End of the day	▸ *Active*: The end time is *00:00* on the selected day of the following day.
Interval definition	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 and days.
Preview	Display of the current configuration settings in local time.

| Option	Description
	Errors are displayed by the corresponding error messages.
	▸ **From**: Start of the interval. Display only.
	▸ **To**: End of the interval. Display only.
Accept	Click on this button to accept the inputs, if they are valid, and close the dialog.
	Time stamp is converted to UTC.
	To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.

4.8.5.4Hour

ENTRY OF THE TIME RANGE IN HOURS.

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.
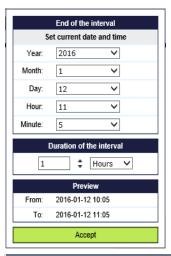
Option	Description
day	Input of day. Select from drop-down list.
Hour	Input of hour. Select from drop-down list.
Interval definition	Duration of the period of time that is to be analyzed. ▶ Text input field: Defines quantity. Input of a number between *1* and *99999*. The quantity can be increased or 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.
Accept	Click on this button to accept the inputs, if they are valid, and close the dialog. Time stamp is converted to UTC. To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.

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.
Interval definition	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, hours and minutes.
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.

Option	Description
	▸ **To**: End of the interval. Display only.
Accept	Click on this button to accept the inputs, if they are valid, and close the dialog.
	Time stamp is converted to UTC.
	To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.

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 ZAMS. 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 Analyzer Wizard Export uses the first that it finds and exports this to the metadata of the Analyzer. 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.
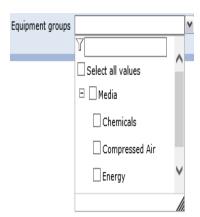
The dialog can be displayed filtered (on page 43). At this the filter criterion is only used on entries which do not have any subordinate elements.

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 status (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 bellow 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 stats 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.

▶ 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.
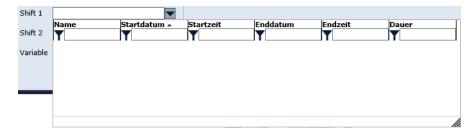
4.8.7 Lot and shift

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

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

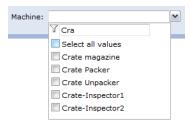A mechanism for evaluating lot groups is available. This is based on the equipment model:

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 41): 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)
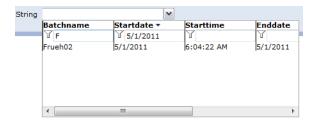
EXAMPLES

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 41) can be filtered and sorted.

FILTER VALUES

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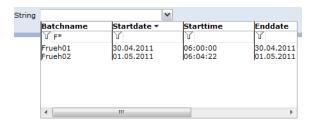
1. Delete the filter criterion from the input field.
2. Press the **Enter** key.
3. The list is rebuild and contains all predefined values.

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

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
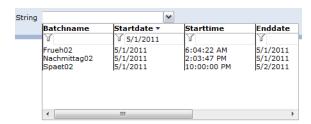
For this filter the following is true:

- ▶ 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

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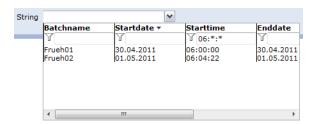
▶ To filter from/up to a special day you may use the following at the beginning:

▶ **<**

▶ **>**

▶ **<=**

▶ **>=**

* 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:

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.
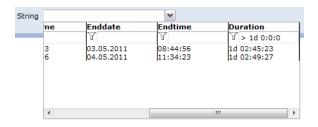
For example:

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

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
A-Z:	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.
Z-A:	Sorting is in reverse alphabetical order according to the display text of the predefined values.
Values upwards:	Sorting direction is upwards according to the predefined values. The data type of the parameter is not taken into account in the

Sorting	Description
	process.
Values downwards:	Sorting direction is downwards according to the predefined values. The data type of the parameter is not taken into account in the process.
In sequence:	The values are written to the list in the order in which they were provided by the SQL Server Reporting Services web service.
In reverse sequence:	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
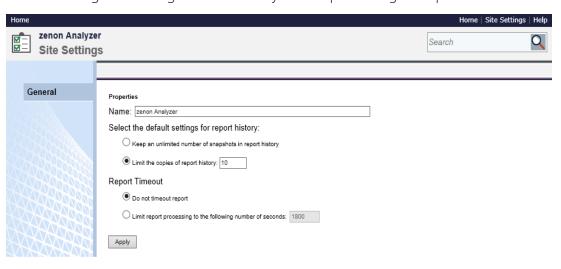
Via the site settings you configure

▶ General settings (on page 49) of the zenon Analyzer

Note: User rights are set and administered in the ZAMS.

4.9.1 General

General settings for naming the zenon Analyzer and processing the reports.

Property	Description
Name	Name which is displayed in the header of the report

Property	Description
	generators.
Default settings for the report history	Defined number of reports saved for the history. Possible settings: ▸ **Keep an unlimited number of snapshots in report history**: Saves as many snapshots as desired. Number is limited by memory space. ▸ **Max. number of copies of the report history**: Entry of the number in the field. Default: *10*
Reportimeout	Defines timeout for processing reports. Possible settings: ▸ **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
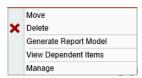
To edit a data source:

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
Hide in side-by-side/one-below-the-other view	*Active*: is hidden in **side-by-side/one-below-the-other view**.
Enable this data source	*Active*: 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.

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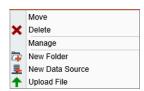
The context menu of folders contains different commands, regardless of the Report Launcher view.

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.
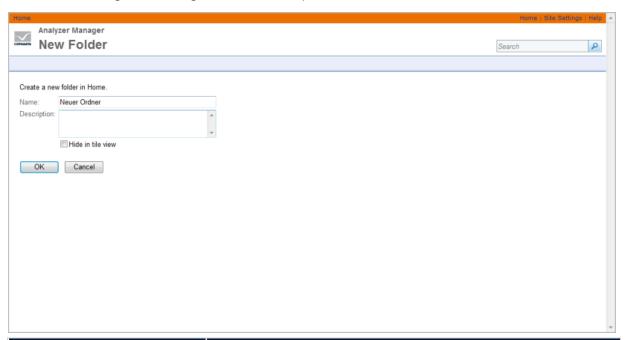
CREATE NEW FOLDER

To create a new folder:

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

2. the dialog for creating a new folder is opened
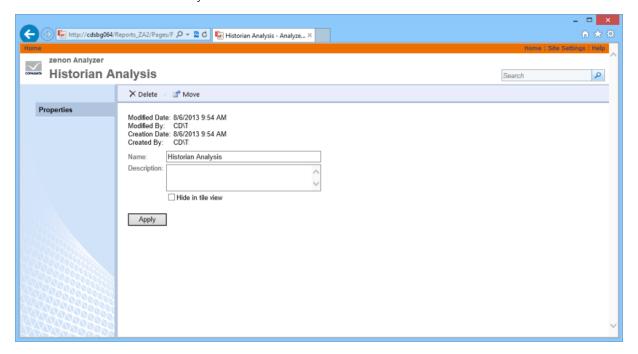
Option	Description
Name	Name of the folder
	Rules:
	‣ Must not be empty.
	‣ Must not consist of periods or spaces
	‣ Must not contain non-permitted characters; The following are not permitted: ;?:@&=+$,*<>|"/
	Maximum length: *126 characters*
Description	Optional description of the folder content.
Hide in symbol view	‣ *Active:* Folder is not displayed in the **symbol view**. This setting can later be changed via menu item **Management** (on page 54) in the drop-down list of the folder.
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
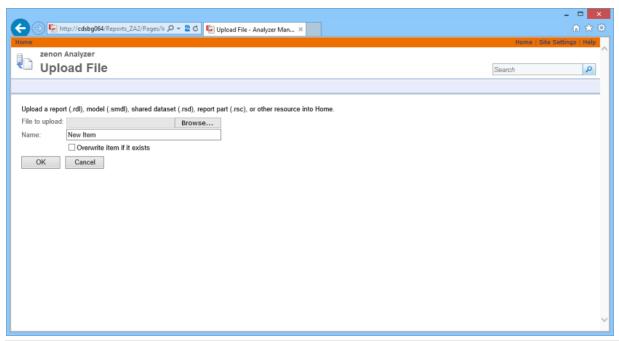
Reports, models and other resources which are edited offline can be uploaded to the Report Server.

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	▸ *Active*: 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:

▸ ZAMS - zenon Analyzer Management 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 chapter Analyzer Export Wizard in section Data abstraction and data inclusion.

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 the Report Launcher using a button.
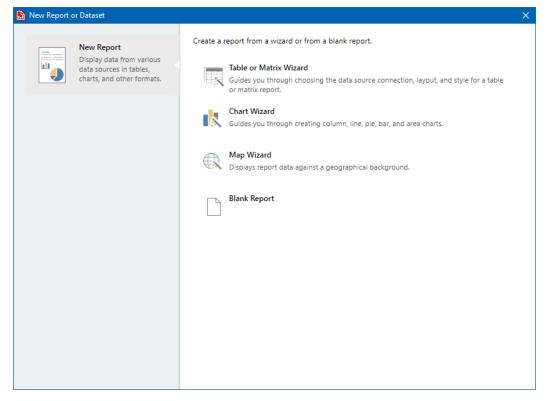
⚙ Information

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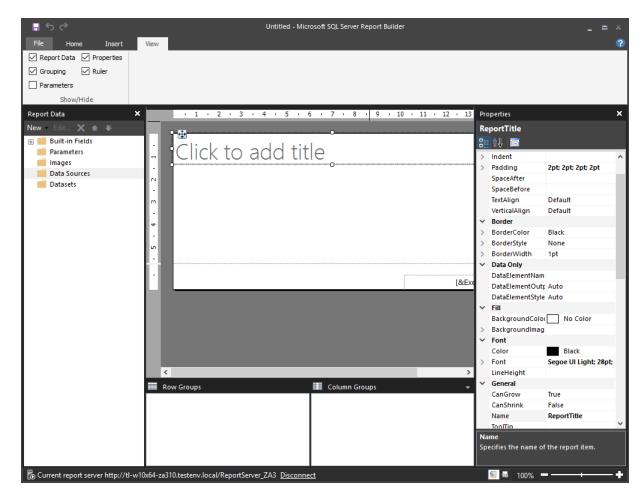
To start the Microsoft Report Builder:

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 the zenon Analyzer Management Studio on the basis of report templates provided.
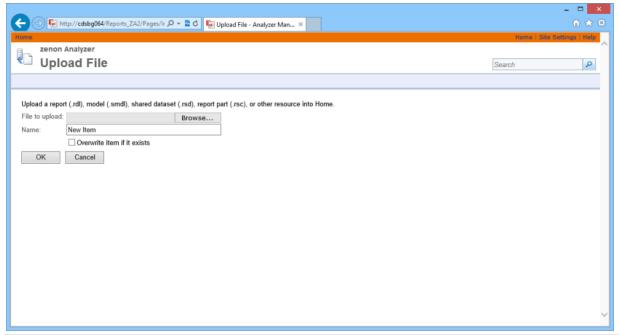
5.2   Upload reports

Reports which were created offline can be uploaded to the Server with the help of the zenon Analyzer.

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	▶ *Active*: 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
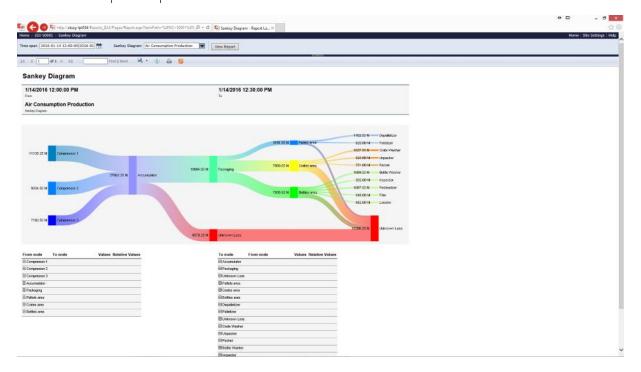
Reports can be called up and configured in the browser on the client computer.

> 💡 **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

Element	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 49) of general

Element	Description
	settings of the site.
Help	Opens the online-help for the Report Launcher.

CONFIGURATION

Element	Description
Control elements	Control elements for configuration of the report. The type of control element depends on the report template. Control elements can depend on one another. In this case, they can only be configured if the previous one has been configured correctly.
Separator	Separates control elements from the toolbar. Clicking on the separator shows or hides the bar with control elements.
Toolbar	Contains symbols (on page 63) for navigation in the report and for further processing of the report.

DISPLAY REPORT

Elements	Description
Report display field	Shows the report with the elements defined in the template: ▸ Name of the report ▸ Configured elements ▸ Graphics ▸ Table

7 Toolbar Report

Option	Description
Navigation arrows and <1 from 1>	Navigation in multi-sided reports: ▸ **|<**: to the start ▸ **<**: back one page ▸ **Field**: Entry of the page to which a jump is to be made; press the **Enter** key to execute ▸ **>**: forward one page ▸ **>|**: to the last page
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: ▸ *XML* ▸ *CSV* ▸ *PDF* ▸ *Web archive* ▸ *Excel* ▸ *TIFF* ▸ *Word*
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 18) 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
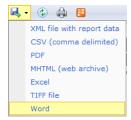
EXPORT REPORT

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.
PDF	Report is saved as PDF file. Click to open the dialog for saving/displaying the web archive.
MHTML	Report is saved as web archive (.mhtml). Click to open the dialog for saving/displaying the web archive.
Excel	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.
TIFF	Report is saved as graphic in the TIFF format. Click to open the dialog for saving/displaying the TIFF file.
Word	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.
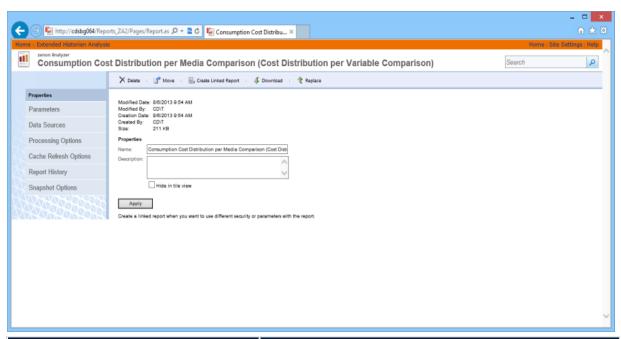
9 Manage reports

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

Click on **Manage** to open the dialog for managing the reports:
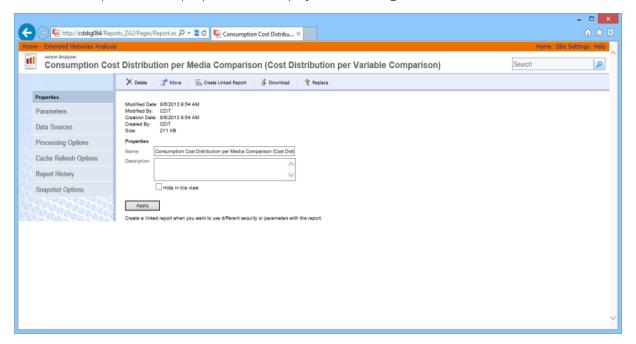
Option	Description
Properties (on page 68)	Properties of the report.
Parameter (on page 69)	Configuration of the parameters of the report.
Data Sources (on page 73)	Selection of data sources.
Processing Options (on page 74)	Configuration of the editing of the report.
Cache Refresh Options (on page 78)	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.

TOOLBAR

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: *126 characters*
Description	Description. Can already be set in ZAMS as a comment. Entries in ZAMS overwrite entries from the Report Launcher during deployment.
Hide in symbol view	▸ Active: Report is not displayed in symbol view.
Apply	Applies changes.
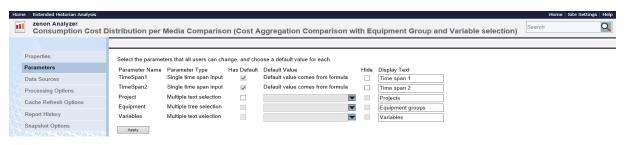
9.2 Parameter

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: ▶ 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	▶ *Active*: Default value is preset in the report for the input. ▶ *Active and grayed out*: Default values of a parameter come from a form or a data set. Default values cannot be changed. ▶ *Inactive*: No value is preset. Each change to the check status of this checkbox made by the user is immediately forwarded to the server.
Default Value	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. Possible elements:

Option	Description
	▸ **Text element:** Is displayed if the **Has default value** option is *active and grayed out* and contains the reason why.
	▸ **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.
	▸ **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.
Hide	▸ *Inactive*: Parameter is shown. The **Display text** option must contain a value in order for the configuration to be valid.
	▸ *Active*: Parameter is hidden. The **Display text** option is emptied.
	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).
	If a parameter cannot be hidden, the checkbox is not selected and deactivated.
	Each change to the check status is immediately forwarded to the server.
Display Text	Enter the text with which the parameter will be displayed in the report.
	Only active if the **Hide** option has not been selected.
	The input field only recognizes changes it it is not in focus.
Apply	Clicking on the button accepts settings if all options have been correctly configured.
	If there are configuration errors, these are displayed

Option	Description
	next to the corresponding option.
	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 the Report Launcher. For example, if Runtime cannot be reached, the SQL connector has not been created, etc.
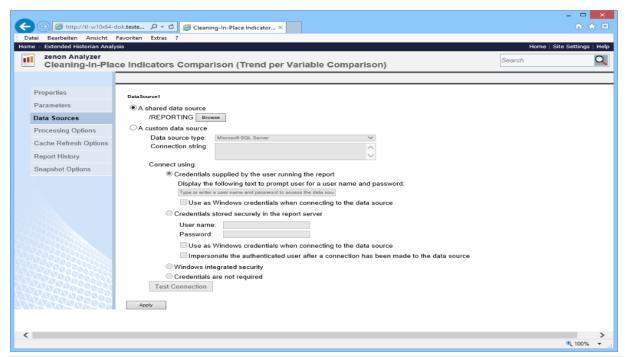
For some parameters, no proposed value can be issued under some circumstances, because a parameter that is to be handled beforehand does not contain a value.
For example: Time filters are based on shifts, but there is no shift data available. in this case, the issue of proposed values is only possible 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
	▶ 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.

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

Option	Description
Always execute this report with the most recent data	▶ Active: The report is always executed with the current data. Selection of an option for temporary copies: ▶ **Do not cache temporary copies of this report** ▶ **Cache a temporary copy of this report. Expire copy of report after a number of minutes:** Entry of minutes in the field. Default: *30* ▶ **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.
Render this report as a snapshot	▶ *Active*: The report is rendered as a snapshot.
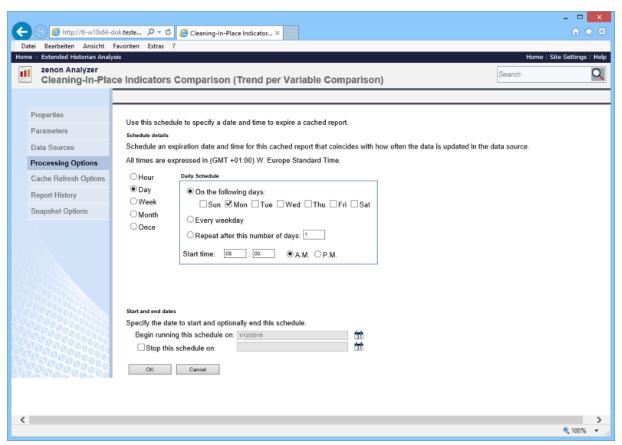
Option	Description
	Can be configured as an option. Schedule (on page 77) selection and configuration: ▸ **Report-specific schedule**: Click on **Configuration** in order to open the configuration dialog. ▸ **Shared schedule**: Clicking on **Test** checks the configuration.
Report timeout	Configuration of the timeout for the report. Options: ▸ **Use the system default setting**: These are set out in the **General** (on page 49) **site settings**. ▸ **Do not timeout report** ▸ **Limit processing of the report to the following number of seconds**: Entry of seconds in the field. Default: *1800* **Do not timeout report**:
Apply	Takes over changed settings **Attention:** If you leave the site without clicking **Apply**, all changes will be lost.

9.4.1 Schedule

Configuration of schedules for the preparation of reports.

Parameter	Description
Selection of interval	Selection of the interval: ▸ **Hour** ▸ **Day** ▸ **Week** ▸ **Month** ▸ **Once** Details are configured in the **Schedule** option.
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.
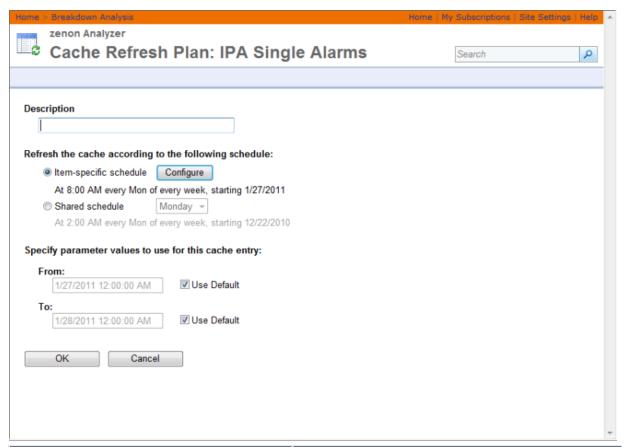
Parameter	Description
Cancel	Discards all changes and closes the dialog.

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.

Option	Description
OK	Accepts input and closes dialog.
Cancel	Discards entries and closes the dialog.

💡 **Information**

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

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:	*Active*: Manual snapshots are possible.
Save all report snapshots in the history	*Active*: each snapshot is also displayed in the report history.
Schedule	Selection of the schedule or creation of a new schedule.

Option	Description
Maximum number of snapshots	Define how many snapshots should be saved. Options: ‣ **Use default settings**: These are set out in the **General** (on page 49) **site settings**. ‣ **Keep an unlimited number of snapshots in report history**: Saves as many snapshots as desired. Number is limited by memory space. ‣ **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 **Analysis with custom formulas** group and all efficiency class analysis reports that use custom formulas.

Validation errors are:

‣ No data or invalid data

‣ Incorrect setting of parameters.
(Notice: Incorrect setting of parameters is not possible in ZAMS, 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.

Action	Validation
	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
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

zenon Analyzer 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 modules such as Editor, Runtime, drivers, etc. as well as zenon Analyzer write messages to a joint log file. These can be read and configured with the Diagnosis Viewer program. It allows the reading

of existing LOG files, online logging, saving of the current view, parameterizing the Diagnosis Viewer and the Diagnosis Server.

START THE DIAGNOSIS VIEWER

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

- ▸ Windows 8: Enter "**Diagnosis Viewer**" on the desktop for **Apps**
- ▸ Windows 7: **Start/All Programs/zenon/Version Independent Tools -> Diagnosis Viewer.**

The Diagnosis Viewer is only available in English.

USING IPV6

The Diagnosis Server also works with Diagnosis Clients which addresses via IPv6 addresses. For this the format of the log file has been adapted. The Diagnosis Viewer only reads the new format of the log files. If files from older zenon versions are opened (or vice versa), the IP address of the Diagnosis Client is not displayed correctly.

DRIVER ANALYSIS

zenon driver 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

Note:

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. For 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 hard drive and which can influence your system performance. They are still logged even after you close the Diagnosis Viewer.

> ⚠ **Attention**
>
> In Windows CE errors are not logged per default due to performance reasons.

11.1.1 General

The zenon Diagnosis System logs error messages from zenon and zenon Analyzer. It consists of three parts:

▶ Diagnosis Server (on page 96): local or defined in zenon6.ini defined **zenLogSrv**

▶ Diagnosis Clients (on page 100): all modules, drivers, services, etc. which write messages

▶ Diagnosis Viewer (on page 103): Analysis program

VERSIONS

From version zenon 7.00 on the service **zenLogSrv** is used instead of the **zenSysSrv** for the diagnosis system. That means:

▶ Diagnosis systems up to version 6.51 and from version 7.00 are each compatible among themselves.

▶ The diagnosis mechanism of zenon 6.51 SP0 and zenon 7.00 SP0 are not compatible.

Compatibility	Diagnosis Server 6.51 SP0 and earlier	Diagnosis Server 7.00 SP0 and higher
Diagnosis Client 6.51 SP0 and earlier	*compatible*	**incompatible**
Diagnosis Viewer 6.51 SP0 and earlier	*compatible*	**incompatible**
Diagnosis Client 7.00 SP0 and higher	**incompatible**	*compatible*
Diagnosis Viewer 7.00 SP0 and higher	**incompatible**	*compatible*

With the Diagnosis Viewerversion 7.00 SP0 and higher you can open log files which were created by Diagnosis Server version 6.51 SP0 (or earlier). It does not work the other way round.

DEFAULT PORTS

▸ Version 7 and higher: *50780* (port of service **zenLogSrv**)

▸ up to 6.51: *1101* (port of service **zenSysSrv**)

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
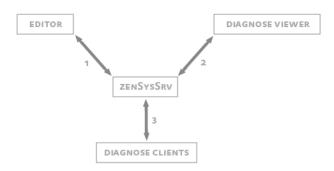
Service **zenLogSrv** buffers log entries until they can be written in the LOG file. If the memory consumptions increases continuously by **zenLogSrv**, it is an indicator that the LOG file cannot be written.

11.1.2 Topology of the diagnosis system

The topology of the diagnosis system differs   for versions up to 6.51 SP0 and from 7.00 SP0 on.

TOPOLOGY BEFORE ZENON 7.00 SP0

The diagram displays all possible connections for which **zenSysSrv** is responsible. Each arrow represents a network connection between the applications. All applications connect to the **zenSysSrv** on port *1101* regardless of whether Client and Server are on the same computer or communicate with each other via a network.

1. The Editor sends log entries, commands and data of the Remote Transport to **zenSysSrv**. **zenSysSrv** sends the configuration of the Diagnosis Client (Editor, Runtime, driver, zenon Web Server, zenon Web Client, etc.) and the Remote Transport data to the Editor.

2. The Diagnosis Viewer sends diagnosis commands, diagnosis configurations and log entries to **zenSysSrv**. **zenSysSrv** sends diagnosis data and the Diagnosis Clientconfiguration to the Diagnosis Viewer.

3. **zenSysSrv** sends the Diagnosis Client configuration to the Diagnosis Clients. The Diagnosis Clients send log entries to **zenSysSrv**.

zenSysSrv reacts correspondingly to each incoming message:

▸ Log entries are written in log files.

▸ Remote Transport commands (start Runtime, write/read back data, etc.) are executed.

▸ Diagnosis commands (set Server/Client configuration, start online logging, etc.) are executed.

TOPOLOGY AS OF ZENON 7.00 SP0

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. The editor 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. The Editor sends commands and data of the Remote Transport to **zenSysSrv**. **zenSysSrv** sends data of the Remote Transport to the Editor.

2. The Editors send log entries to **zenLogSrv**. **zenLogSrv** sends the Diagnosis Client configuration to the Editor.

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. The **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.
The **zenLogSrv** reacts to incoming diagnosis commands and log entries

EXAMPLE

IN an environment with a central Diagnosis Server the Runtime is started on a device. Based on the Runtime version the configuration is read from **zenon6.ini**. Versions before 7.00 SP0 read entry **LOG_CONFIG** 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 87).) Each additional component loaded by the Runtime (driver, **zenNetSrv**, etc.) also establish a diagnosis connection.

11.1.3 Procedure

As default only error messages (errors) are sent from the Clients to the Diagnosis Server.

The Diagnosis Server saves the received messages in TXT files with a special structure (on page 119). The default folder for the log files is the **LOG** subfolder in the **%ProgramData%** folder. For example: **%ProgramData%\COPA-DATA\LOG**.
You can find further information in the installation and updates manual in the File structure chapter.

Note: Under Windows CE error messages are also not created per default due to resource issues.

In order to report not only error messages to the Diagnosis Server but also other information important for the diagnosis, the according settings have to be defined for the Client (on page 100).

You can also configure the behavior of the Server (on page 96).

CONFIGURATION

The configuration of the connection is done in zenon6.inI (on page 88) divided in:

▸ 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 103) also enables you to configure settings for the connection:

▸ Settings of the server (on page 98)

▸ Connection setting for Diagnosis Server connection (on page 105)

▸ Diagnosis Client (on page 100)

▸ Diagnosis Viewer - Analysis program   (on page 103)

We recommend to do the configuration of the connection for Server and Client via zenon6.ini.

PROCEDURE

The Diagnosis Server is:

▸ a service at the PC.
The service starts automatically when the operating system boots. The local service can only be started once.

▸ an application under CE.
Under CE only one process can use the port. Additionally started processes terminate themselves as the port cannot be opened. If the local configuration of the Diagnosis Servers is set under CE in such a way that only the user interface is displayed (INIT=2), several processes could emerge by the Diagnosis Clients trying to start the local Diagnosis Server

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:

   a) The diagnosis connection has been established and the log entries are sent.

   Establishing failed:

   b) The Diagnosis Client tries to start and use the local Diagnosis Server.
   On a PC it tries to start the service.
   Under CE it tries to create the process.

   c) 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. At this it is differentiated between version 7.00 and up and versions 6.51 and earlier. 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 diverted, without the LOG entries of new clients being affected.

DIAGNOSIS SERVER PRIOR TO VERSION 7.00 SP0

INI entry	Description
[SYS_REMOTE]	Section in **zenon6.ini**.

INI entry	Description
	Contains parameters for *zenSysSrv* (Remote Transport and Diagnosis Server).
LOGDirectory=	Defines folder for the LOG files.
	If there is no entry, the LOG folder in the **%ProgramData%** folder is used by default.
	Example: **LOGDirectory=** *%ProgramData%\COPA-DATA\zenon760\LOG*
CONFIG=	Configuration string for the Diagnosis Server and **zenSysSrv** . Remote Transport and the diagnosis system use the same server configuration up to and including version 6.51 SP0. The string consists of the following parts: **DEVICE=***[Device];HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]*
	‣ *DEVICE*: sets the communication type used. *TCP/IP* and *serial* are available.
	‣ *HOST*: is set to the computer name of the Diagnosis Server.
	‣ *PORT*: specifies the port to be used.
	‣ *TIMEOUT*: specifies the timeout time for the connection is seconds.
	‣ *BAUD*: specifies the connection speed of a serial connection.
	<u>**PC configuration:**</u>
	‣ *DEVICE*=TCP/IP
	‣ *HOST*=localhost
	‣ *PORT*=1101
	‣ *TIMEOUT*=10
	<u>**CE configuration:**</u>
	‣ *DEVICE*=COM1
	‣ *BAUD*=115200
LOGMinFreeDiskSpace =	Defines minimum memory (in MB) that must be available on the hard drive. LOG files are deleted before this value is gone below.
	Default: *1024*
LOGMaxUsedDiskSpace	Defines the maximum memory on the hard drive in MB used for LOG

INI entry	Description
=	files. LOG files are deleted if this value is exceeded. Default: *1024*
LOGMinUsedDiskSpace =	Defines memory on the hard drive (in MB) that is used even if there are no LOG files. Default: *5*
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* **Note:** As part of the separation of zenSysServ and zenLogServ for

INI entry	Description
	zenon 7.00, this default value was also changed for other versions. The default value was previously *2*.

DIAGNOSIS SERVER AS OF VERSION 7.00 SP0

INI entry	Description
[LOGGING_SYSTEM]	Section in **zenon6.ini**. 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, e. B. **%ProgramData%\COPA-DATA\zenon760\LOG**
CONFIG=	Configuration string for the Diagnosis Server. The string consists of the following parts: **DEVICE=**_TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]_ ▸ *DEVICE*: sets the communication type used and must always be set to *TCP/IP* ▸ *HOST*: is set to the computer name of the Diagnosis Server. ▸ *PORT*: specifies the port to be used. ▸ *TIMEOUT*: specifies the timeout time for the connection is seconds. **<u>Configuration:</u>** ▸ *DEVICE=*TCP/IP ▸ *HOST=*localhost ▸ *PORT=*50780 ▸ *TIMEOUT=*10
LOGMinFreeDiskSpace =	Defines minimum memory (in MB) that must be available on the hard drive. LOG files are deleted before this value is gone below. Default: *1024*

INI entry	Description
LOGMaxUsedDiskSpace=	Defines the maximum memory on the hard drive in MB used for LOG files. LOG files are deleted if this value is exceeded. Default: *1024*
LOGMinUsedDiskSpace=	Defines memory on the hard drive (in MB) that is used even if there are no LOG files. Default: *5*
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. Default: *0*
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 **zenon6.ini**. 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]_ ▸ _DEVICE_: sets the communication type used and must always be set to _TCP/IP_ ▸ _HOST_: is set to the computer name of the Diagnosis Server. ▸ _PORT_: specifies the port to be used. ▸ _TIMEOUT_: specifies the timeout time for the connection is seconds. **Configuration:** ▸ _DEVICE_=TCP/IP ▸ _HOST_=localhost ▸ _PORT_=1101 ▸ _TIMEOUT_=10

DIAGNOSIS CLIENT AS OF VERSION 7.00 SP0

INI entry	Description
[LOGGING_SYSTEM]	Section in **zenon6.ini**. 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]_ ▸ _DEVICE_: sets the communication type used and must always be set to _TCP/IP_ ▸ _HOST_: is set to the computer name of the Diagnosis Server. ▸ _PORT_: specifies the port to be used. ▸ _TIMEOUT_: specifies the timeout time for the connection is seconds.

INI entry	Description
	<u>Configuration:</u> ▸ *DEVICE*=TCP/IP ▸ *HOST*=localhost ▸ *PORT*=50780 ▸ *TIMEOUT*=10

NOTE:

INIT UNDER CE

Under Windows CE we urgently recommend to not set entry **INIT=** (in section [LOGGING_SYSTEM] or [SYS_REMOTE]) to value *2*.

Reason: The value *2* means that both **SysSrvCE** and **LogSrvCE** only display the user interface and do not open the listening port.
If now a Diagnosis Client wants to establish a connection, it will fail. As in this case the Diagnosis Client start process **LogSrvCE** and the process does not open the port, each Diagnosis Client starts such a process. This leads to several parallel **LogSrvCE** processes and to a delay in starting the Diagnosis Clients as it waits for the timeout of the connection while establishing the diagnosis connection.

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.

11.1.3.2 Windows CE

Under Windows CE the Diagnosis Server is started as an application.

At the configuration (on page 88) of the connection consider the recommendation for parameter **INIT**:
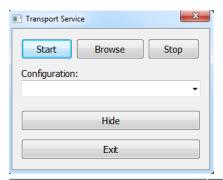
Under Windows CE we urgently recommend to not set entry **INIT=** (in section [LOGGING_SYSTEM] or [SYS_REMOTE]) to value *2*.

Reason: The value *2* means that both **SysSrvCE** and **LogSrvCE** only display the user interface and do not open the listening port.
If now a Diagnosis Client wants to establish a connection, it will fail. As in this case the Diagnosis Client start process **LogSrvCE** and the process does not open the port, each Diagnosis Client starts such a process. This leads to several parallel **LogSrvCE** processes and to a delay in starting the Diagnosis Clients as it waits for the timeout of the connection while establishing the diagnosis connection.

USER INTERFACE UNDER CE

TRANSPORT SERVICE (ZENSYSSRV)
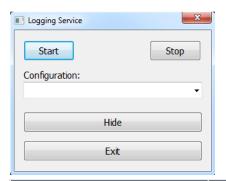
Parameter	Description
Start	Opens the Listening port and enables **zenSysSrv** to receive Remote Transport commands.
Browse	Opens the dialog for browsing the file system.
Stop	Terminates the receiving of Remote Transport commands and closes the Listening port.
Configuration	Selection of an existing server configuration from drop-down list. New connections cannot be configured. See section Entries in zenon6.ini (on page 88) for the configuration of the connection. Available are: ▸ Configuration from **zenon6.ini** ▸ Default configuration for TCP/IP ▸ Default configuration for COM1 to COM4
Hide	Minimizes the user interface into the task bar.
Exit	Terminates the application and closes the Listening port if necessary.

Parameter	Description
X (button top right)	Minimizes the user interface into the task bar.

LOGGING SERVICE (ZENLOGSRV)

Parameter	Description
Start	Opens the Listening port and enables **zenLogSrv** to receive log entries.
Stop	Terminates the receiving of log entries and closes the Listening port.
Configuration	Selection of an existing configuration from drop-down list. New connections cannot be configured. See section Entries in zenon6.ini (on page 88) for the configuration of the connection. Available are: ▸ Configuration from zenon6.ini ▸ Default configuration for TCP/IP
Hide	Minimizes the user interface into the task bar.
Exit	Terminates the application and closes the Listening port if necessary.
X (button top right)	Minimizes the user interface into the task bar.

11.1.4 Diagnosis Server

The Diagnosis Server:

▸ Creates and manages log files.

▸ The Server is:

  ▸ implemented from zenon 7.00 on as zenLogSrv

  ▸ up until zenon 6.51 integrated in the zenSysSrv.

▸ The configuration of the server is read from the zenon6.ini (on page 88).

▸ 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>.txt*.

▸ The server is multi client able. 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 menu entry **Settings – Server configuration** is only available, if online logging is not used at the moment.

11.1.4.1 System integrity monitoring

At the start of the Runtime a monitoring thread with high priority is also started. The monitoring thread checks critical parameters every ten seconds and writes corresponding warnings or errors in module Supervisor of the Diagnosis Server.

The following parameters are monitored.

Parameters	Limit
Warning threshold for used handles	> 5000
Error threshold for used handles	> 9000
Warning threshold for used GDI objects	> 5000
Error threshold for used GDI objects	> 9000
Warning threshold for CPU use for the main thread	> 70 %
Error threshold for CPU use for the main thread	> 90 %
Warning threshold for total CPU use	> 70 %

Parameters	Limit
Warning threshold for total CPU use	> 90 %
Warning threshold for free main memory	< 30 %
Error threshold for free main memory	< 10 %
Warning threshold for OnTimer in the main frame	> 1000 ms
Error threshold for OnTimer in the main frame	> 5000 ms

11.1.4.2 Settings of the server

The Diagnosis Server can be configured via entries in file zenon6.ini or via dialog **Server configuration** in the Diagnosis Client. We recommend to do the settings in file zenon6.ini.

CONFIGURATION VIA ZENON6.INI

See section Entries in zenon6.ini (on page 88).

CONFIGURATION VIA DIALOG
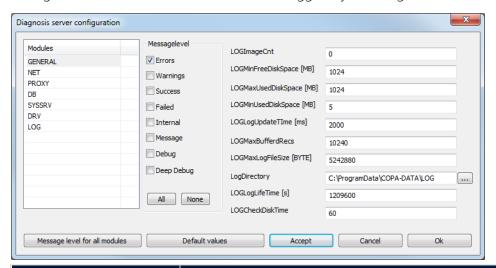
To configure the Diagnosis Server via the dialog:

1. Start the Diagnosis Viewer

2. open entry **File Connect to... (on page 105).**

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
Modules	Selection of the modules which you want to configure.
Messagelevel	Selection of the events to be logged. Default: **Errors**
LOGImageCnt	Number of records, after which all incremental fields will be written. Default: *0 (not active)*
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 LOGMinFreeDiskSpace is under-run. Default: *5 MB*
LOGLogUpdateTime	Time in ms, after which the received entries are saved. Default: *2000 ms*
LOGMaxBufferedRecs	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 configurable number of log entries a complete image for all addresses is written into the log file. Received data are written to the log files. The entry is done via temporary buffer. It can be configured whether the data should be

Parameter	Description
	written immediately or delayed. Number of buffered entries if they cannot be saved. Default: *10240*
LOGMaxLogFileSize	The server writes the received log data into the log file. If this log file reaches the configured size, a new file is started. Maximal size of a single log file in bytes. Default: *5 MB*
LOGDirectory	Folder in which the log files are written. Default: *%ProgramData%\COPA-DATA\LOG*
LOGLogLifeTime	It is continuously checked, if the lifetime of the log files is exceeded. The oldest log files are deleted. Number of seconds to keep the log files. Default: *14 days*
LOGCheckDiskTime	Time in sec, in which the used disk space id checked. Default: *60 s*
Message level for all modules	Settings are taken over for all modules.
Default values	Restore default settings.
Accept	Take over settings for this module.
Cancel	Discards changes and closes dialog.
OK	Applies changes and closes 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 - dependent on the used version - from the local *zenon6.ini* (on page 88) and contacted. 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).
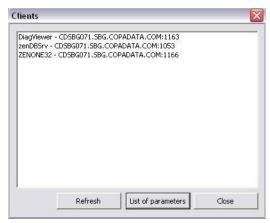
CONFIGURATION OF DIAGNOSIS CLIENT

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
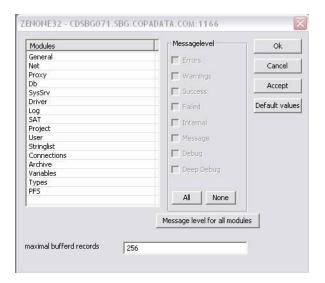
CLIENT LIST

Parameter	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:

Module	Description
Modules	Selection of the modules which you want to configure.
	The list is made up of default modules and modules dependent on the respective client.
	▸ **General**:General messages
	▸ **Net**:Network messages
	▸ **Proxy**: Messages of the zenon Proxy
	▸ **Db**: Message from **ZenDbSrv**
	▸ **SysSrv**: Message from **ZenSysSrv**
	▸ **Driver**: Messages from a driver
	▸ **LOG**: Messages from logging
	▸ **SAT**: SICAM 230-specific messages
Messagelevel	Type of information which should be logged.
All	Selects all.
None	Deselects all.
Message Level for all Modules	Assigns highlighted message levels to all modules.
Max Buffered records	Number of entries to be buffered if there is no connection to the *Diagnosis Server*.
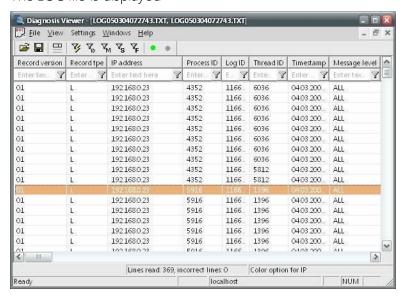
Module	Description
	Default: *256*
OK	Applies all changes and closes dialog.
Cancel	Discards all changes and closes the dialog.
Accept	Applies all changes. The dialog remains open.
Default values	Enters the defaults.

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.

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
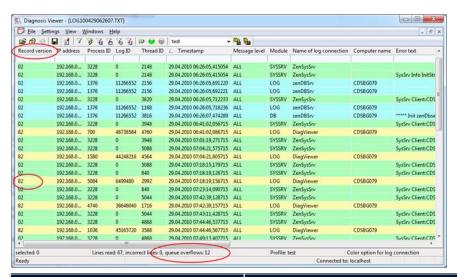
5. Double click an entry to open the detail view.

RECOGNIZING QUEUE OVERFLOW AT DRIVER

If messages of a driver are deleted because of queue overflow, the Diagnosis Client and the Diagnosis Server set a marker in the new entry when writing a new entry for all activated modules (on page 112) 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 status 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 status 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.

Parameters	Description
File	Commands in menu File.
Open	Opens dialog for selecting a log file saved in TXT format. Each newly opened log file is displayed in its own window.

Parameters	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 98).
Online	Activates the online error view. If online logging is started, all incoming entries are displayed. The same filter dialog as for reading files can also be set here. Difference: If no log connection is selected, all incoming log entries will be displayed, otherwise only the ones from the selected clients. 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.
Offline	Deactivates the online error view. (Default)
Exit	Closes the Diagnosis Viewer.

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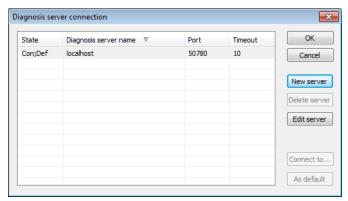
The Diagnosis Viewer automatically connects to a selected default Server at the start. If no default server is defined, **localhost** is used as default server.

Recommendation: Set up the server configuration using the entries in **zenon6.ini** (on page 88).

SELECT DIAGNOSIS SERVER

Click on **File -> Connect to…** to open the dialog to select a server:
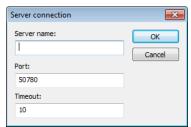
Parameter	Description
List Server	Lists all configured Servers and displays them: ▸ Status: Con: connected server Def: Default Server. This is shown on opening. ▸ Name ▸ Port ▸ Timeout
OK	Applies settings and closes the dialog.
Cancel	Discards settings and closes the dialog.
New Server	Opens the dialog 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:
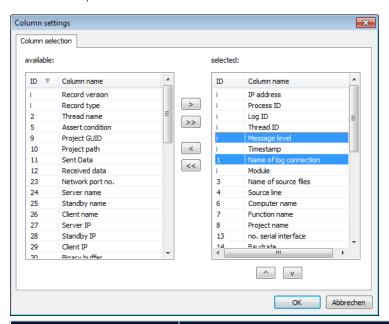
Parameter	Description
Server name	Name of the PC to which to connect. Each computer can only be entered as a server once. The following must run on the PC: ▶ up to version 6.51: **zenSysSrv** ▶ from version 7.00: **zenLogSrv**
Port	Port of the service on the target computer: ▶ Up to version 6.51: *1101* ▶ From version 7.00: *50780*
Timeout	Time in seconds to wait for a response from the **Sysservice**. Default: *10 s*
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. Column settings can however be saved as profiles.

Parameters	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:

Parameters	Description
Add all columns with	Adds all columns which contain entries.

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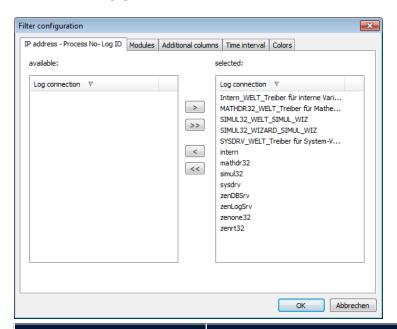
To use the symbol bar, you must activate it in menu **View** via menu item **Icon bar**.

Symbol	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 111)**.
3	**Change pre-filter for modules**	Opens tab **Modules** (on page 112).
4	**Change pre-filter for additional columns**	Opens tab **Additional columns** (on page 113).
5	**Change pre-filter for time interval**	Opens tab **Time interval** (on page 114).
6	**Change pre-filter for coloring**	Opens tab Colors (on page 115).

FILTER DIALOG
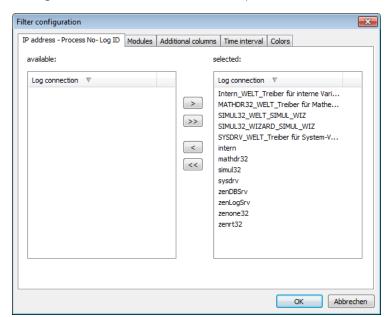
Tabs	Description
IP-ProcessID-LogID	Opens tab **IP address - Process No - Log ID** (on page 111) for configuring the connection which should be logged.
Modules	Opens tab **Modules** (on page 112) for the modules which should be logged.
Additional columns	Opens tab **Additional columns** (on page 113) for selecting additional columns which should be displayed.
Time interval	Opens tab **Time interval** (on page 114) for defining time filter.
Colors	Opens tab Colors (on page 115) 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.
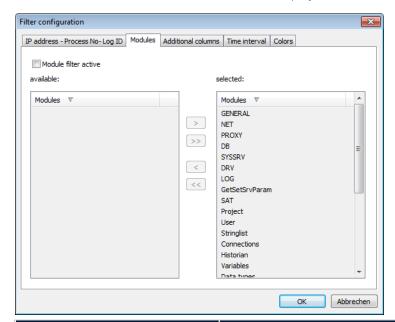
Parameters	Description
available	List of available connections.
selected	List of selected connections.
Pfeiltasten	Add selected (**>**) or all (**>>**) connections to list **selected** or removes them from the list (**<** or **<<**).
OK	Applies all changes on all tabs and closes the dialog.
Abbrechen	Discards all changes on all tabs and closes the dialog.

11.1.7.2 Modules

Selection of the modules which should be displayed.
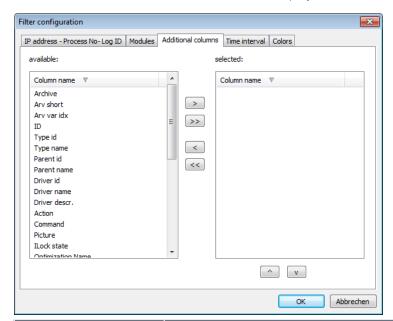
Parameters	Description
Module filter active	*Active:* It is filtered on modules. With this only LOG data records are displayed which are assigned to a selected module.
available	Available modules.
selected	Selected modules.
Cursor keys	Add selected (**>**) or all (**>>**) connections to list **selected** 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.

11.1.7.3 Additional columns

Selection of the columns which should be displayed additionally.
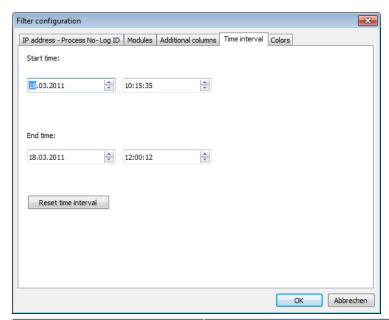
Parameters	Description
available	List of the available columns. All field definitions existing in the file are displayed.
selected	List of the selected columns.
Cursor keys	Add selected (**>**) or all (**>>**) connections to list **selected** or removes them from the list (**<** or **<<**).
OK	Applies all changes on all tabs and closes the dialog.
Cancel	Discards all changes on all tabs and closes the dialog.

11.1.7.4 Time interval

Configuration of the time filter for displaying the entries.
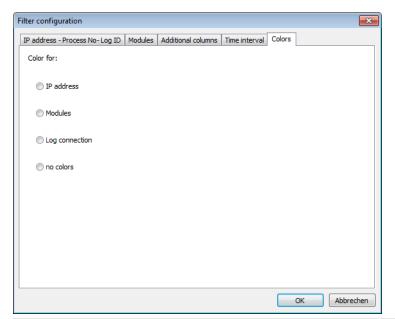
Parameter	Description
Start time:	Selection of the date and point in time from which entries should be displayed. Default: Current date
End time:	Selection of the date and point in time up to which entries should be displayed. Default: Current date
Reset time interval	Sets filter back to default.
OK	Applies all changes on all tabs and closes the dialog.
Cancel	Discards all changes on all tabs and closes the dialog.

11.1.7.5 Colors

Selection of the color display of the information.

Parameters	Description
Colors for:	Selection of the color
IP address	*Active*: Different IP addresses are colored differently.
Modules	*Active*: Different modules are colored differently.
Log connection	*Active*: Different names of the log connection are colored differently.
no colors	*Active*: Entries are not colored.
OK	Applies all changes on all tabs and closes the dialog.
Cancel	Discards all changes on all tabs 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 109) has to be set to limit the display. This is possible with five property pages. This filter can be modifies 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	*IP address*	IP address. These fields identify the clients and allow the message to be assigned.
i	*Log ID*	entry ID These fields identify the clients and allow the message to be assigned.
i	*Message Level*	Name of the message level for which the message was entered.
i	*Module*	Name of the module, which entered the message.
i	*Process ID*	ID of the project. These fields identify the clients and allow the message to be assigned.
i	*Record type*	Type of entry.
i	*Record version*	Version number of the entry.
i	*Thread ID*	ID of the thread, from which the message was entered.
i	*Timestamp*	Time of the message in UTC.

OPTIONAL FIELDS WITH FIX ID.

ID	Constant	Description
1	*Name of log connection*	Name of logging connection
2	*Thread name*	Name of the threads.
3	*Name of source files*	Name of the source file.

ID	Constant	Description
4	*Source line*	Source line
5	*Assert condition*	Assert condition
6	*Computer name*	Computer name
7	*Function name*	Function name
8	*Project name*	Project name
9	*Project GUID*	GUID of the project.
10	*Project path*	Project path
11	*Sent Data*	Sent data
12	*Received data*	Received data
13	*no. serial interface*	Number of the serial interface.
14	*Baudrate*	Baud rate
15	*dtr setting*	DTR setting.
16	*rts setting*	RTS setting.
17	*Serial char. length*	Serial character length
18	*Parity*	Parity
19	*No. stopbits*	Number of stop bits
20	*CTS*	CTS.
21	*dsr*	DSR.
22	*dsr sensitivity*	DSR sensitivity.
23	*Network port no.*	Port number in the network.
24	*Server name*	Server name.
25	*Standby name*	Name of standby server
26	*Client name*	Client name.
27	*Server IP*	IP address server.
28	*Standby IP*	IP address standby.
29	*Client IP*	IP address client.

ID	Constant	Description
30	*Binary buffer*	Binary buffer.
31	*Pointer*	Pointer
32	*Class name*	Class name
33	*Error code*	Error code:
34	*DLL instance handle*	DLL instance handle
35	*DLL name*	DLL name
36	*Driver error parameter 1*	Driver error parameter 1
37	*Driver error parameter 2*	Driver error parameter 2
38	*Trace Message*	Trace message
39	*Errortext*	Error text
40	*Error file name*	Name of error file.
41	*Success condition*	Condition for success
42	*Value if successful*	Value when successful
43	*Net adress*	Net address:
44	*Datablock*	Data block.
45	*Offset*	Offset:
46	*Bit number*	Bit number
47	*Area in PLC*	Area in the PLC.
48	*Communication direction*	Shows the direction of the communication in a string.
49	*General text*	General text
50	*Main version no.*	Number of main version.
51	*Sub version no.*	Number of sub-version.
52	*Build no.*	Build number.
53	*Servicepack*	Service Pack.
54	*Hotfix no.*	Hotfix number

ID	Constant	Description
55	*Sending client*	Client, which sent the command
56	*Target client for command*	Client that is the target of the command.
57	*Database no.*	Number of database.
58	*Datapoint no.*	Datapoint number (channel number)
59	*Datapoint value*	Value of datapoint
60	*Datapoint status*	Status of datapoint
61	*Datapoint timestamp*	Time stamp of datapoint in seconds
62	*Duration in ms*	Error wait time in milliseconds.
63	*Number, counter*	number, counter.

11.1.9 Structure of the LOG file

Log files are ANSI text files. The individual fields are separated using tab characters. **CR+LF** is used as an end character. This data can be opened in Notepad as a result.

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.

1	**Error message**
2	Warnings
4	Success messages
8	TRACE
16	ASSERT
32	LOG messages
64	Debug
128	Extended Debug

11.1.9.2 Search function

With **View/Find** the current window can be searched. 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 filed 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
The port cannot be opened.	▸ Another application uses the port. Check via "netstat". ▸ The ports for entries **[SYS_REMOTE] CONFIG** and **[LOGGING_SYSTEM] CONFIG** are identical. **zenLogSrv** and **zenSysSrv** then try to open the same port.
Diagnosis Client*s do not start the zenLogSrv*	▸ **zenAdminSrv** was ended. Without it the service cannot be started. ▸ **zenLogSrv** is not registered as a service at the PC. In this case enter the following in the command line: **zenLogSrv.exe –Service** ▸ Diagnosis Clients are not of version 7.00 SP0 or higher. The **zenLogSrv** is only supported from this

Error	Possible causes
	version on.
	▸ Under Windows CE: The individual components (Runtime, **SysSrvCE**, **LogSrvCE**) are located in different folders. They must be located in the same folder. Otherwise the components do not find one another.
Under CE many processes are created by SysSrvCE.exe or LogSrvCE.exe.	▸ One of the two entries in zenon6.ini **[SYS_REMOTE] INIT** or **[LOGGING_SYSTEM] INIT** has the value *2*. As a result the application only displays the user interface and does not open the Listening port. Each Diagnosis Client then tries to start the process as it cannot connect to the Diagnosis Server.
Several processes crash. (*Unhandled Exceptions of the* Diagnosis Server *at receiving log messages or configuration commands or of the* Diagnosis Client *and* Diagnosis Viewer *during booting or during receiving the configuration*)	▸ The versions do not match. Diagnosis Clients, Diagnosis Server and Diagnosis Viewer must either all have version 7.00 SP0 or higher or all version 6.51 SP0 or earlier (see Compatibility (on page 84)).

LOG ENTRIES

Entry	Description
SysSrv received not supported network message!	**zenSysSrv** received a network telegram which is not supported. Example: Log entries.
LogSrv received not supported network message!	**zenLogSrv** received a network telegram which is not supported. Example: Remote Transport commands
Could not open listening port. Server will be stopped.	The **zenLogSrv** or the **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. ▸ **zenSysSrv** under CE: Message box for the user and log entry to the Diagnosis Server. ▸ **zenLogSrv** under CE:

Entry	Description
	Message box for the user.

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
[SysSrv/LogSrv/SysCli/LogCli] Info InitString [String]	A network connection has been initialized with the displayed configuration string. Server opens ports and Clients connect to the Server.
[SysSrv/LogSrv/SysCli/LogCli] WINSOCK ERROR	An exception occurred during a network operation. The details are also displayed.
[SysSrv/LogSrv] Accept Failed!	An incoming connection from a Client could not be accepted.
[SysSrv/LogSrv/SysCli/ LogCli] Write Faild	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.
[SysSrv/LogSrv] Client [String] in List Delete!	The Client log off from the Server.
[SysSrv/LogSrv] Client [String] in List Insert	The Client log on to the Server.

11.2 Error messages, zenon Analyzer 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]	*ERRORS*	An error has triggered the ASP.Net application error event.
Report Launcher Application Start	*DEBUG*	The ASP.Net web application is being started up.
Application_AuthenticateRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL]	*DEEPDEBUG*	An authentication query was received.
Application_BeginRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL]	*DEEPDEBUG*	An HTTP query was received.
Application_EndRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL]	*DEEPDEBUG*	An HTTP query was handled.
TRACE for [Komponente]: [Meldung]	*Depending on the trace level:* ▸ *ALL* ▸ *ERRORS* ▸ *WARNINGS* ▸ *DEBUG* ▸ *DEEPDebug*	A trace message was received.
WebService method „[Methode]" called with [Parameterliste]	*DEEPDEBUG*	A WebService method of the Reporting Services Web Service end points is being called up.
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]:	*Depending on*	An event log message was received.

Entry	Level	Description
[Meldung]	*the event log type:* ▸ *ERRORS* ▸ *WARNINGS* ▸ *DEBUG* ▸ *DEEPDebug*	
Exception caught in method „[Methodenname]" of type „[Klasenname inklusive Namespace]": [Exception-Dump]	*ERRORS*	An exception was caught.

ZAMS

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] [accepted/processed]	*DEBUG*	Client connection was accepted or handled.
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.

Entry	Level	Description
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.
Command [Kommando mit Parametern] has been processed.	*DEBUG*	A query was processed. (this message is written by every query type)
Deprecated command [Kommando mit Parametern] has been processed.	*DEBUG*	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!	*ERRORS*	Provider for hash could not be initialized
Reading the hash data failed!	*ERRORS*	Reading of hash data failed.
The data could not be hashed!	*ERRORS*	Data hashing failed.
The hash object could not be created!	*ERRORS*	Hash object could not be created.
The cryptographic service provider is not usable!	*ERRORS*	Provider for hash cannot be used.
Domain [Name] released.	*DEBUG*	Domain approved
Reading data for [domain/project] [Name].	*DEBUG*	Start of loading of data for the domain or project
Datasource could not be opened. Errorcode=[HEX-Fehlercode]	*ERRORS*	Data source could not be opened.
Session not be opened. Errorcode=[HEX-Fehlercode]	*ERRORS*	Session could not be opened.
[Anzahl] [Objekttyp] read.	*DEBUG*	Read object data from database.
[Objekttype] data could not be read. Errorcode=[HEX-Fehlercode]	*ERRORS*	Object data could not be read from the database.
Reading data for [domain/project] [Name] completed.	*DEBUG*	Loading of data for domain or project completed.
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.
Socket could not be created. Errorcode=[Fehlercode]	*ERRORS*	The network connection could not be opened.
Both server and standby server for the project could not be reached.	*ERRORS*	A connection could not be established to either the Server or the Standby (if defined).

Entry	Level	Description
Connecting to [IP-Adresse & Port]	*DEBUG*	Connection establishment
Connecting to [IP-Adresse & Port] failed	*ERRORS*	Connection Failed
There was no response to the initialization request.	*ERRORS*	Initialization query remained unanswered.
Using connector version [Version]	*DEBUG*	Connection version handled.
There was no response to the query.	*ERRORS*	Query remained unanswered.
Query [Anfragetyp]: [Parameterliste]	*DEBUG*	Receive query.
Invalid call: [Fehlerinformation]	*ERRORS*	Invalid query.
Connector error: [Fehlerinformation]	*ERRORS*	Error during communication with the connector container or the connector container has reported an error when editing the query.
Unexpected connector error: [Fehlerinformation]	*ERRORS*	An exception has occurred.
Query [Anfragetyp] processed: [Anzahl] result rows returned.	*DEBUG*	Query completed successfully and data restored.