



zenon
by COPA-DATA

zenon manual
Release Notes
zenon Analyzer 3.30

v.3.30



COPA-DATA

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1 Welcome to COPA-DATA help

ZENON VIDEO TUTORIALS

You can find practical examples for project configuration with zenon in our YouTube channel (https://www.copadata.com/tutorial_menu). The tutorials are grouped according to topics and give an initial insight into working with different zenon modules. All tutorials are available in English.

GENERAL HELP

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

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 Release Notes zenon Analyzer 3.30

In this document, you be provided with information about technical requirements and updates and changes for zenon Analyzer 3.30.

3 Requirements

The following prerequisites are applicable for work with the zenon Analyzer:

ANALYZER SERVER HARDWARE AND SOFTWARE

HARDWARE

Analyzer Server:

Parameters	Recommended	Minimum
CPU	Quad-Core Server CPU (maximum 24 cores/4 sockets)	Quad-core
RAM	Up to 128 GB	12 GB
Free memory	200 GB	10 GB

Engineering computer:

Parameters	Recommended	Minimum
CPU	Dual Core	Pentium IV
RAM	4 GB	1 GB
Free memory	200GB	2 GB
Monitor (pixels)	1920 x 1080	1024 x 768

SOFTWARE

Analyzer Server:

A 64-bit operating system is required for the database server. The following are supported:

- ▶ Windows Server 2012
- ▶ Windows Server 2012 R2
- ▶ Windows Server 2016
- ▶ Windows Server 2019
- ▶ Windows 8.1 64-Bit
- ▶ Windows 8.1 Pro 64-Bit
- ▶ Windows 8.1 Enterprise 64-Bit
- ▶ Windows 8 64-Bit
- ▶ Windows 8 Pro 64-Bit
- ▶ Windows 8 Enterprise 64-Bit
- ▶ Windows 10 Home 64-Bit

- ▶ Windows 10 Professional 64-Bit
- ▶ Windows 10 Enterprise 64-Bit

Note: An installed IIS service is required for the installation of the server.

Engineering computer:

The following are supported for ZAMS, the manual data editor, metadata editor and migration tool:

- ▶ Windows Server 2012 R2
- ▶ Windows Server 2012
- ▶ Windows Server 2016
- ▶ Windows 8.1 32-Bit and 64-Bit
- ▶ Windows 8.1 Enterprise 32-Bit and 64-Bit
- ▶ Windows 8 32-Bit and 64-Bit
- ▶ Windows 8 Pro 32-Bit and 64-Bit
- ▶ Windows 8 Enterprise 32-Bit and 64-Bit
- ▶ Windows 10 Home 32-Bit and 64-Bit
- ▶ Windows 10 Professional 32-Bit and 64-Bit
- ▶ Windows 10 Enterprise 32-Bit and 64-Bit

Web browser:

- ▶ Internet Explorer 11 (normal view only)
- ▶ Internet Explorer 10 (normal view only)
- ▶ Chrome
- ▶ Firefox

Note: Zoom in the report is only possible with Chrome.

Recommended HMI/SCADA system:

- ▶ zenon 8.10

.NET Framework 4.6.2:

- ▶ .NET Framework 4.6.2 has to be already run capable on the target computer in order to end the installation successfully.

CONNECTORS

The following is applicable for the SCADA Runtime connector:

- ▶ Timeout: is independent of the report timeout.
Default: 5 minutes (can be configured)
- ▶ Variables: Only variables that are listed in metadata are requested
- ▶ String variable: maximum of 4000 characters

The performance of a connector depends on the:

- ▶ Performance of the Analyzer server
- ▶ Performance of the Runtime server
- ▶ Load of the Runtime servers (connector runs with low priority)
- ▶ Network performance and network load

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.

SCHEDULES

- ▶ **Calendar days in months** are limited to 1 - 28 (corresponds to February in non-leap years)
- ▶ The "*Month end*" event is not available

ANALYZER EXPORT WIZARD

The Analyzer Export Wizard works, depending on the version, with different zenon Analyzer versions and different zenon versions. For details, read the **Analyzer wizard compatibility** chapter.

Information

Do not use zenon color palettes for dynamic limit values for zenon projects whose data is to be exported for zenon Analyzer. Limit values cannot be dynamically amended in zenon Analyzer. Information from color palettes can therefore not be evaluated. This can lead to illegible graphics.

3.1 Connection to IP address and port (F 8960)

All zenon Analyzer modules use the stipulated ports and IP addresses for licensing. These can be amended in the **Startup Tool**. If a network adapter is set, the adapter name is resolved for the IP address.

The connector container now uses the stipulated ports and IP addresses to open the listening socket. These can be amended in the **Startup Tool**.

3.2 Metadata Synchronizer (F 23720, 136588)

The **Metadata Synchronizer** sends metadata from zenon to a zenon Analyzer metadata database.

Requirements: zenon Analyzer 3.30 or higher and zenon 8.10 or higher.

The **Metadata Synchronizer** replaces the Export Wizard.

The main difference between them is that:

- ▶ All data that can be processed in the zenon Analyzer is automatically transferred to the database.
- ▶ Very simplified configuration: Only the connection needs to be configured for each project.
- ▶ Analyzer Server and database are easily selected from a drop-down list. No manual entry necessary.
- ▶ Simultaneous transfer of several projects to several different databases is possible with a click.
- ▶ Actions and errors can be evaluated on the computer with the zenon Editor and on the computer with the Analyzer Server using the diagnosis viewer.
- ▶ A global project no longer needs to be used.
The projects to be transferred are grouped according to target database.
The following is thus possible:
 - ▶ 1 global project and 0-N standard projects:
Corresponds to the possibilities of the Export Wizard.
 - ▶ No global project and precisely 1 standard project:
Content that normally comes from the global project is taken from the standard project. In this case, the standard project is considered as the global project and standard project.

Note: Configuration without a global project but with a standard project is not possible.

Entries from zenon are largely validated before transfer. Errors are corrected. If correction is not possible, the respective object is excluded from synchronization. All validation errors are logged in the diagnosis viewer as a warning and displayed in the zenon Editor in the output window.

4 ZAMS

4.1 Custom themes and report templates (F 57077)

In addition to the supplied themes and report templates, custom themes and custom report templates can now be created. Custom themes can contain subgroups with up to 9 levels, as well as supplied and custom report templates.

Custom themes and report templates:

- ▶ Are created and administered in the **Custom themes dialog**
- ▶ Are displayed, selected and loaded in the **Add report template dialog**
- ▶ Can be exported as a ZIP file and it is possible to import back from these.

A custom report template:

- ▶ Contains report templates including the configuration of the settings
- ▶ Contains a time filter including its configuration
- ▶ Contains the graphic design
- ▶ Has no dependencies on any particular zenon Analyzer database

4.2 Dynamic width of footers (F 79205)

The footer can now be dynamically amended for reports. The format *Width from report, custom height* has been introduced to do this. The page width is thus calculated as the report width plus side margins. The height can be set by the user.

4.3 Embedded help (F 57294)

Embedded help is now available in ZAMS, in the Prediction Model Manager and in the dialog for the report styles. It is displayed below the properties by default. If a property is selected, a short help text and a link to the manual are shown. Links to the manual or to other texts of the embedded help are opened in a separate window.

4.4 Enhanced security for databases and reports (F 78127)

Backups have been enhanced with individual selection of databases and reports for backup and restore. To do this, **enhanced backup** has been implemented in the **SQL Server** ribbon. The objects that are in an enhanced backup depend on the type of backup and the selected objects. During creation, the user can select the objects that are backed up.

The following are precluded from backup in general:

- ▶ Linked Server
- ▶ Databases that have not been found
- ▶ Databases that have been deactivated for this backup by the user

Note: If a backup is only created with reports, then all databases are considered not found.

An enhanced backup consists of:

- ▶ Reports from the server including its folder structure:
This includes reports and settings for data sources and parameters. These can be saved and restored.
- ▶ Analyzer databases
- ▶ Other databases, with the exception of SQL Server system databases and SQL Server Reporting Services databases

Types of backup:

- ▶ *Reports:* Only reports prepared on the server are backed up.
- ▶ *Complete:* All databases and reports can be selected.

The selection dialogs are structured in exactly the same way and offer the respective available objects.

4.5 Output window enhancement (F 77745)

Error messages, warnings, information and status messages are displayed in the ZAMS output window. If possible, the report template from which the message comes is shown for each message.

The following are linked to reports:

- ▶ Messages when loading the report.
For example messages on missing styles, incorrect server or database.
- ▶ All messages that are logged in dialogs that have been opened from a certain report. In the pivot configuration, for example.
- ▶ All messages when preparing a report.
- ▶ All messages when preparing several reports that can be assigned to one report. Messages that are applicable for several reports are displayed without assignment.

Note: This function was already available in version 3.00, but it was not supported in version 3.10 and 3.20 for technical reasons.

4.6 Prediction Model Manager: Automatic periodicity detection (F 79206)

Periodicities for time-based prediction models can now be detected automatically. This function is available in the wizard and in the main window.

The periodicity detection can detect a period and a long-term trend. Nested periodicities are not detected. The periodicity detection supports you when finding the periods, but manual checking of the periods by the user is necessary however.

4.7 Prediction Model Manager: Diagram display speed increased (F 79206)

The display of the diagrams in the **Prediction Model Manager** has been made faster. To do this, the following was changed primarily:

- ▶ The diagrams are only redrawn if one of the following properties is changed:
 - ▶ **Periodicities**
 - ▶ **Data cleansing**All other properties do not trigger redrawing.
- ▶ Separators are only still marked by default if they are less than 100.

4.8 Prediction Model Manager: Diagram display optimized (F 79206)

The display of the diagrams in the **Prediction Model Manager** has been optimized. The following was implemented primarily:

- ▶ In the visualization window, only tabs for the diagrams that can be used are displayed. For example, no trend diagrams are offered for purely value-based models.
- ▶ Predicted values are always drawn in the future.
- ▶ If a periodicity is set to *No recurrence* using the **Periodicities** property, it is also no longer offered in the checkboxes for the separator lines.
- ▶ It is possible to zoom as much as desired in diagrams with a mouse gesture.
- ▶ Trend: The minimum value of the X-axis is derived from the start time for the prediction model.

4.9 Prediction Model Manager: Optimized selection of prediction models (F 29206)

The model prediction has been improved. An algorithm to avoid overfitting has been implemented to do this. The finding of the best polynomial was switched from the previous points system to *Root mean squared error*. For better interpretation of the model, the Coefficient for determination is now calculated and displayed.

4.10 Prediction Model Manager: Seconds can be set (F 79206)

In the **Prediction Model Manager**, it is now possible to use seconds for getting data and to use periodicity for prediction models.

The model start time of a time-based model is now also applicable as the start time of all period calculations.

Attention

The database version has been updated from version 6 to version 7.

Due to the changes in the periodicity calculation, it is highly recommended that all time-based prediction models from zenon Analyzer 3.20 are retrained.

Otherwise the formulas in the time-based models no longer suit the periodicities, which leads to calculation errors.

4.11 Report styles: Change to colors (F 125352)

Colors have been enhanced and the definition and assignment amended.

Recommendation: Check the assignment of colors with converted report templates.

AMENDED AND NEW COLORS

The following were changed most of all:

- ▶ New series colors 11 - 14 added.
- ▶ Series colors redefined and various properties reassigned.
- ▶ Trend lines 6 and 7 added and colors for all amended.
- ▶ Trend markers 6 and 7 added and colors for all amended.
- ▶ Borders for trend markers 6 and 7 added and colors amended for all.

- ▶ Trend line with markers 6 and 7 added and colors amended for all.

SERIES COLORS

The series colors have been extended from 10 to 14, redefined and rearranged.

Overview of changes:

Series color	Color previously HEX	New RGB decimal	New HEX
1	9A1933	86 / 133 / 54	568536
2	B53B2E	204 / 32 / 50	CC2032
3	D69132	29 / 108 / 180	1D6CB4
4	97BD3A	253 / 211 / 1	FDD301
5	5E9C3B	129 / 41 / 140	81158C
5	509FCA	246 / 138 / 49	F68A31
7	38529D	127 / 127 / 127	7F7F7F
8	262068	41 / 89 / 43	29592B
9	3B1D65	131 / 20 / 47	83142F
10	441B6A	14 / 88 / 120	0E5878
11 (new)	--	180 / 168 / 57	B4A839
12 (new)	--	82 / 30 / 94	521E5E
13 (new)	--	174 / 101 / 39	AE6527
14 (new)	--	52 / 52 / 52	343434

4.12 Prediction Model Manager with absolute end time (F 79206)

With time-based prediction models, the end time for the obtaining of training data can now be set to a fixed point in time.

4.13 Report styles: New styles for statistics and prediction (F 79206)

New styles have been implemented for report templates for statistics and predictions.

The dialog to configure report styles has been enhanced with the following areas:

- ▶ **Series style:** Defines styles for displaying the fill of columns and bars.
- ▶ **Style properties\series:** Configuration of the display of series via the subgroups:
 - ▶ **Statistics**
 - ▶ **Predictive**

4.14 Rename computer with Analyzer Server and reporting services (F 79205)

If a computer with Analyzer Server is renamed, this leads to the SQL Server and reporting services no longer working correctly. This situation can be solved by complete reinstallation or subsequent manual editing.

The necessary steps for manual switching have been added to the documentation: **ZAMS => Analyzer Server and Reporting Services => Rename computer with Analyzer Server and reporting services.**

4.15 Service Node Interface (F 136588)

The **Service Node** forms the interface to the **Service Hub** in the Service Grid. The zenon Analyzer provides other prosumers with reports, SQL elements and prediction models.

A service that monitors the configuration runs on the Analyzer Server. Configuration is therefore only possible if ZAMS is executed on the same computer the Analyzer server.

Availability and status of the service are displayed via a symbol in the info area of the Windows task bar. A dialog with actions and log entries can thus be opened.

4.16 Language table: Symbols open drop-down list directly (F 78127)

In the language table, previously an arrow next to the symbol needed to be clicked for symbols that provide further functionality via drop-down lists. Now the list can also be opened by clicking on the symbol directly.

5 Report templates

Report templates have been enhanced and new ones have been added. The possible number of report templates has been increased.

5.1 Number of report templates per report increased (F 148759)

A maximum of 20 report templates per report can be used. This functionality has also been implemented for ZAMS 3.20 from build 50583. **Zams_Rep** files with more than 5 report templates can also be opened and edited with an older version 3.20. However, no further report templates can be added, if 5 or more report templates are already contained therein.

Note: The more report templates and time filters are used in a report, the more data must be processed. Certain operations can thus take longer and files created can be large accordingly.

5.2 N last alarms (F 136552)

There is a new report template available: **N last alarms**.

Reports that are based on this template create an alarm list in table form for a time range and show the selected number of last alarms. In doing so, the number of alarms provided is directly limited before the output of data. The number to be displayed is pre-defined using the **Default value for N** report settings and stipulated in the report using **Number of alarms/events**. In doing so, the alarms are sorted according to incoming time stamp and only the given number of alarms are output with the most recent incoming alarm.

5.3 Top N alarms enhanced (F 136552)

The **Top N alarms** report template now allows the output of the most recent alarm duration gross or net.

Note on the transfer of previous report templates: If a report is loaded with a pre-existing **top N alarms** report template, the previous setting is applied.

6 Analyzer Wizards

The Analyzer Export Wizard has been amended to version 3.30.

The following wizards are available for the following versions of zenon:

Wizard \ zenon version	8.10	8.00	7.60	7.50	7.20	7.11	7.10	7.00
Meaning and Waterfall Chart Wizard	X	X	X	X	X	X	X	--

Wizard \ zenon version	8.10	8.00	7.60	7.50	7.20	7.11	7.10	7.00
Sankey Wizard	X	X	X	X	X	X	X	--
Metadata Synchronizer	X	--	--	--	--	--	--	--
Note: Supplements Analyzer wizards with enhanced functionality. For details, see Basics manual.								
Export Wizard for Analyzer 3.30	X	X	X	--	--	--	--	--
Export Wizard for Analyzer 3.10 an 3.20	X	X	X	X	X	--	--	--
Export Wizard for Analyzer 3.00	X	X	X	X	X	X	--	--
Export Wizard for Analyzer 2.20	X	X	X	X	X	X	X	--
Export Wizard for Analyzer 2.10	X	X	X	X	X	X	X	X
Export Wizard for Analyzer 2.00	--	--	--	--	--	--	X	X

Key:

- ▶ X: available
- ▶ --: not available

7 Report Launcher

8 Analyzer Server

zenon Analyzer of versions 2.XX and 3.XX can be operated at the same time. components that can only be installed once per computer, such as Connector Container or the Licensing Service, work throughout all versions.

8.1 Metadata database structure amended (F 23720)

The structure of the metadata database has been changed. Columns that are not required have been removed from some tables.

8.2 zrsGetTimeChunkBoundaries UDF added (F 79206)

This new UDF provides the start and end time of a time range, derived from:

- ▶ A time stamp and
- ▶ the time period width specified through quantity and granularity

This UDF corresponds to the combination of **zrsGetBaseUTCDate** and **zrsGetEndUTCDate** plus additions.

It was created for the use of seconds in prediction models.

9 Service Grid

zenon Analyzer now works together with the new Service Grid. This provides web-based services for automation.

The term Service Grid refers to a distributed software platform that consists of several components. These are also called Services. Each individual one of these Services fulfills a certain task and can be installed and operated on different target systems separately from other Services.

Either a physical or a virtual computer can be used as a base system. It is thus possible for example to use virtual machines of any desired cloud platform for the operation of the Service Grid.

The individual Services use web technologies. Content is thus completely usable on mobile devices too.

The Service Grid is compatible with the zenon 2019 release. zenon Runtime, zenon Editor and zenon Analyzer can thus be connected. These components can thus exchange data via the Service Grid and make it accessible to other Service Grid components.

Different application scenarios can be implemented using this networking of components with Service Grid.

For example:

- ▶ Cross-location networking and production facilities
- ▶ Analysis of historical data and behavior of values predicted therefrom
- ▶ Connection of third-party systems and mobile apps for data querying and control
- ▶ Connection of IoT devices such as smart energy meters
- ▶ Display of the current equipment status using web-based user interfaces

The Service Grid uses event-orientated Publish/Subscribe communication via a central **Service Hub** for data transfer between the Services. The individual participants can thus exchange data flexibly with each other. This model also supports the ability of the system to be distributed. This is because the individual Service components each only need to be aware of the **Service Hub**.

Data transfer via the **Service Hub** is encrypted in any case. The participants need Service access data and digital certificates for this. Secure data transfer via public networks, such as the internet, is thus guaranteed.

Mechanisms for the authentication and authorization of users ensure regulated access to the web user interfaces and programming interfaces of the Services offered.