



**zenon**  
by COPA-DATA

**zenon Analyzer  
manual  
Release Notes  
zenon Analyzer 3.40**

v.3.40



**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](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](mailto:documentation@copadata.com).

## PROJECT SUPPORT

You can receive support for any real project you may have from our customer service team, which you can contact via email at [support@copadata.com](mailto: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](mailto:sales@copadata.com).

# 2 Release Notes zenon Analyzer 3.40

In this document, you are provided with information about technical requirements, as well as updates and changes for zenon Analyzer 3.40.

# 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 8.20

### **.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**.

## 4 Metadata Synchronizer: Validation (F 23720)

The validation of the Metadata Synchronizer has been enhanced.

In order to avoid invalid configurations, the settings in the zenon Editor and in the zenon Analyzer are validated automatically.

In order to avoid errors from the start, ensure that you use permitted characters when naming objects.

For example, certain character names are not permitted in many object names: ; --,

Entries from zenon are largely validated before transfer. Errors are corrected. If correction is not possible, the respective object is excluded from synchronization. Warnings are displayed in the respective output window - zenon Editor or **Service Node Status** - for each validation error.

## 5 Licensing: 3 devices per user (F 183161)

From version 3.40, up to three different devices at the same time are permitted for each user. Each user can occupy up to three devices at the same time with their user name. Further devices are declined.

If a device is inactive for a period of time, the license allocation also expires. This license that has become free can be assigned to a new device.

### **Waiting periods:**

- ▶ ZAMS, Prediction Model Manager, Manual Data Editor and Metadata Editor: 30 seconds
- ▶ Report Launcher: 15 minutes



## 6 pyZAN library for the use of Python (F 203031)

**pyZAN** is a Python module. Access to zenon Analyzer is thus possible from Python directly. Usage data from running Runtime projects can be read, filtered or analyzed using the metadata information that is read off. This also enables very complex queries, for example for the calculation of prediction models.

### REQUIREMENT

**pyZAN** needs:

- ▶ An installed and licensed zenon Analyzer.  
This must not be executed on the same system as the Python environment.
- ▶ A metadata database with the relevant data.
- ▶ Access to Runtime data, evacuated archives or third-party databases.

### OPERATION

The **pyZAN** module can be downloaded via the **CopaData** Python Package from the official [www.pypi.org](https://www.pypi.org) (<https://www.pypi.org>) page.

You can find tutorials for the use of **pyZAN** on GitHub.

## 7 ZAMS

### 7.1 Connector for third-party database connector with views (F 181999)

In ZAMS, connectors for third-party databases can also be included in tables as virtual archives.

For data from Oracle and Azure, schemes that cannot be used are filtered out beforehand in the process.

### 7.2 RDL templates: Custom headers and footers (F 172701)

RDL templates can now contain custom headers and footers.

They contain:

- ▶ Information about the size and position
- ▶ Further elements such as text, images and graphics

When preparing a report, user-defined headers and footers are taken from the RDL template. The default footer is used if the RDL template does not contain a footer.

The width information of all RDL templates is noted in ZAMS. If the report is wider than the minimum needed by the template, the behavior can be configured for each element in the header and footer:

**The elements can:**

- ▶ Remain unchanged
- ▶ Grow in width accordingly
- ▶ Be moved to the right

RDL templates can still also be renamed, exported and imported again.

### 7.3 Automatically update stored procedures (F 190555)

Stored procedures are now updated by clicking on the **Update SQL Server Extensions** button. To do this, when updating the database assemblies, all SQL elements contained in the database are checked and updated as required.

The updating is also executed when the version is changed.

**Hinweis:** when upgrading zenon Analyzer 3.30 to 3.40, all SQL elements are updated at once. Only amended SQL elements are updated for future upgrades.

## 8 Report templates

### 8.1 Number of report templates and maximum height (F 201857)

The number of possible report templates in a report has been increased from *20* to *50*. At the same time, the maximum report height has been increased from *10000 mm* to *100000 mm*. The SQL Server reporting services permit a maximum of *11557 mm*. The maximum height of *100000 mm* enables automatic layout and engineering. The validation integrated into ZAMS only enables provision of a report if the maximum height does not exceed *11557 mm*.

### 8.2 Calculated fields: Use as Y-axis (F 182026)

Calculated fields are now supported in all diagrams that are suitable for them.

The following must be the case for this:

- ▶ The diagram must be an aggregation diagram, trend diagram, scatter plot or Pareto diagram (partial support)
- ▶ A numerical field type must be selected

Currently-supported diagrams and report templates for calculated fields:

Theme	Report template	Supported diagram types
Alarm and Event Analysis	Alarm Aggregation	▶ Aggregation chart
	Top N Alarms	▶ Aggregation chart
	Top N Events	▶ Aggregation chart
Custom Formula Analysis	Custom Formula Aggregated Trend	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Custom Formula Aggregation	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Custom Formula Trend	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
Extended Historian Analysis	Historian Aggregated Trend per Equipment Group	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Historian Aggregated Trend with Equipment Group and Variable Selection	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Historian Aggregation per Equipment Group	▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Historian Trend with Equipment Group and Variable Selection	▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Cost Aggregation per Equipment Group	▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Cost Aggregation with Equipment Group and Variable Selection	▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram

Theme	Report template	Supported diagram types
	Relative Historian Aggregated Trend with Equipment Group and Variable Selection	▶ <b><u>Trend chart</u></b>
	Relative Historian Aggregation per Equipment Group	▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Relative Historian Aggregation with Equipment Group and Variable Selection	▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Historian Trend per Equipment Group	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Historian Trend with Equipment Group and Variable Selection	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
Historian Analysis	Historian Aggregated Trend	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Historian Aggregation	▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
	Historian Distribution	▶ Distribution chart
	Historian Trend	▶ <b><u>Trend chart</u></b> ▶ Aggregation chart ▶ <b><u>Pareto</u></b> diagram
ISO 50001	Load Duration Curve for Equipment Groups	▶ Load duration curve
	Load Duration Curve with Variable Selection	▶ Load duration curve
Production Analysis Line Based	Comprehensive Line Productivity Lot History (with lot tracking)	▶ <b><u>Trend chart</u></b>

Theme	Report template	Supported diagram types
	Line Productivity Indicators Lot History (with lot tracking)	<ul style="list-style-type: none"> <li>▶ Aggregation chart</li> </ul> <p>Note on indicator table: A key word is needed for the column with calculated fields.</p>
	Line Productivity Indicators Analysis (with lot tracking)	<ul style="list-style-type: none"> <li>▶ Aggregation chart</li> </ul> <p>Note on indicator table: A key word is needed for the column with calculated fields.</p>
	Line Productivity Indicators Analysis (without lot tracking)	<p>Note on indicator table: A key word is needed for the column with calculated fields.</p>
Production Analysis Machine Based	Comprehensive Productivity Analysis	<ul style="list-style-type: none"> <li>▶ <b><u>Pareto</u></b> diagram</li> </ul>
	Comprehensive Productivity Lot History	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> </ul>
	Losses Analysis	<ul style="list-style-type: none"> <li>▶ <b><u>Pareto</u></b> diagram</li> </ul>
	Productivity Indicators Analysis	<ul style="list-style-type: none"> <li>▶ Aggregation chart</li> </ul> <p>Note on indicator table: A key word is needed for the column with calculated fields.</p>
	Productivity Indicators Lot History	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> </ul>
OEE Analysis	OEE Indicator	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> <li>▶ Aggregation chart</li> </ul> <p>Note on indicator table: A key word is needed for the column with calculated fields.</p>

Theme	Report template	Supported diagram types
	OEE Indicator Lot History	▶ <u>Trend chart</u>
Predictive Analytics	Aggregated Prediction Trend per Variable	▶ <u>Trend chart</u> ▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Aggregated Prediction Trend per Equipment Group	▶ <u>Trend chart</u> ▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Prediction Aggregation per Equipment Group	▶ <u>Trend chart</u> ▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Prediction Aggregation per Variable	▶ <u>Trend chart</u> ▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Cost Prediction Aggregation per Equipment Group	▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Cost Prediction Aggregation per Variable	▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Relative Prediction Aggregation per Equipment Group	▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Relative Prediction Aggregation per Variable	▶ Aggregation chart ▶ <u>Pareto</u> diagram
	Prediction Scatter Plot	▶ Scatter Plot
	Prediction Scatter Plot with Reference Curve	▶ Scatter Plot
	Prediction Model Trainings History	▶ <u>Trend chart</u>

Theme	Report template	Supported diagram types
	Prediction Trend per Variable	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> <li>▶ Aggregation chart</li> <li>▶ <b><u>Pareto</u></b> diagram</li> </ul>
	Prediction Trend per Equipment Group	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> <li>▶ Aggregation chart</li> <li>▶ <b><u>Pareto</u></b> diagram</li> </ul>
Statistical Analysis	Process Capability Trend	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> </ul>
	Process Capability Trend based on raw data	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> </ul>
Target Actual Analysis	Target Actual Aggregated Trend (absolute)	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> <li>▶ Aggregation chart</li> </ul>
	Target Actual Aggregated Trend (relative)	<ul style="list-style-type: none"> <li>▶ <b><u>Trend chart</u></b></li> <li>▶ Aggregation chart</li> </ul>
	Scatter plot	<ul style="list-style-type: none"> <li>▶ Scatter Plot</li> </ul>
	Scatter Plot with Reference Curve	<ul style="list-style-type: none"> <li>▶ Scatter Plot</li> </ul>
Wind Power Plant Analysis	Wind Rose	<ul style="list-style-type: none"> <li>▶ Polar chart</li> </ul>

### 8.3 New report templates for Gantt (F 198876)

There are two new report templates available for Gantt reports:

- ▶ **Gantt chart with equipment group selection:** Analyzes lots, shifts and variables - specified through meanings, from AML, CEL or archive - and displays the results as a Gantt chart and as a table. In doing so, only the equipment groups selected in the report are taken into account, not any subgroups.

- ▶ **Gantt Chart with Range Classification and Equipment Group Selection:** Analyzes lots, shifts and variables and displays the result as a Gantt chart and in table form. Variables are specified through meanings from AML, CEL or archive. Numerical values are assigned from classes derived from **REMA-STATENAMES**. In doing so, only the equipment groups selected in the report are taken into account, not any subgroups.

As part of the implementation, SQL elements have been modified and renamed:

Previously	New
LineAnalysis_GetGanttBaseData	LineAnalysis340_GetGanttBaseData
LineAnalysis_GetGanttData	LineAnalysis340_GetGanttData
LineAnalysis_GetGanttRangeData	LineAnalysis340_GetGanttRangeData

## 8.4 Improved performance of report templates (F 208833)

The time required to create a report for the following report templates has been reduced by optimizing the Stored Procedures:

- ▶ Alarm Aggregation
- ▶ Alarm List
- ▶ Event List
- ▶ N Last Alarms
- ▶ Top N Alarms
- ▶ Top N Alarms grouped
- ▶ Top N Events
- ▶ Top N Events grouped
- ▶ Gantt Chart
- ▶ Gantt Chart with Range Classification

Update the SQL Server enhancements in ZAMS in order to apply these improvements to existing reports from previous versions.

## 8.5 XY trend variables: Multiple selection for Y-axis (188826)

The **XY-trend based on variables** report template now allows multiple selection for the Y-axis.



## 8.6 Time filter increased to 10 (F 187054)

Up to 10 time filters per report template can now be configured. Previously a maximum of 5 were permitted.

# 9 Analyzer Server

## 9.1 Connector call for aggregated archives (F 187129)

It is now possible to filter for aggregation types when getting aggregated archives. In doing so, the desired aggregation type is already filtered during the call and only the appropriate data is obtained.

## 9.2 SQL connector via OpenQuery (F 187129)

The SQL connector is fully included in the database assembly. OPENQUERY is always used with a linked server and the statement is tailored precisely to the current query.

You thus benefit from:

- ▶ Quicker configuration of the SQL connector
- ▶ As many projects, archives, etc. as desired are possible in a database.
- ▶ Increased performance for queries to the linked server.