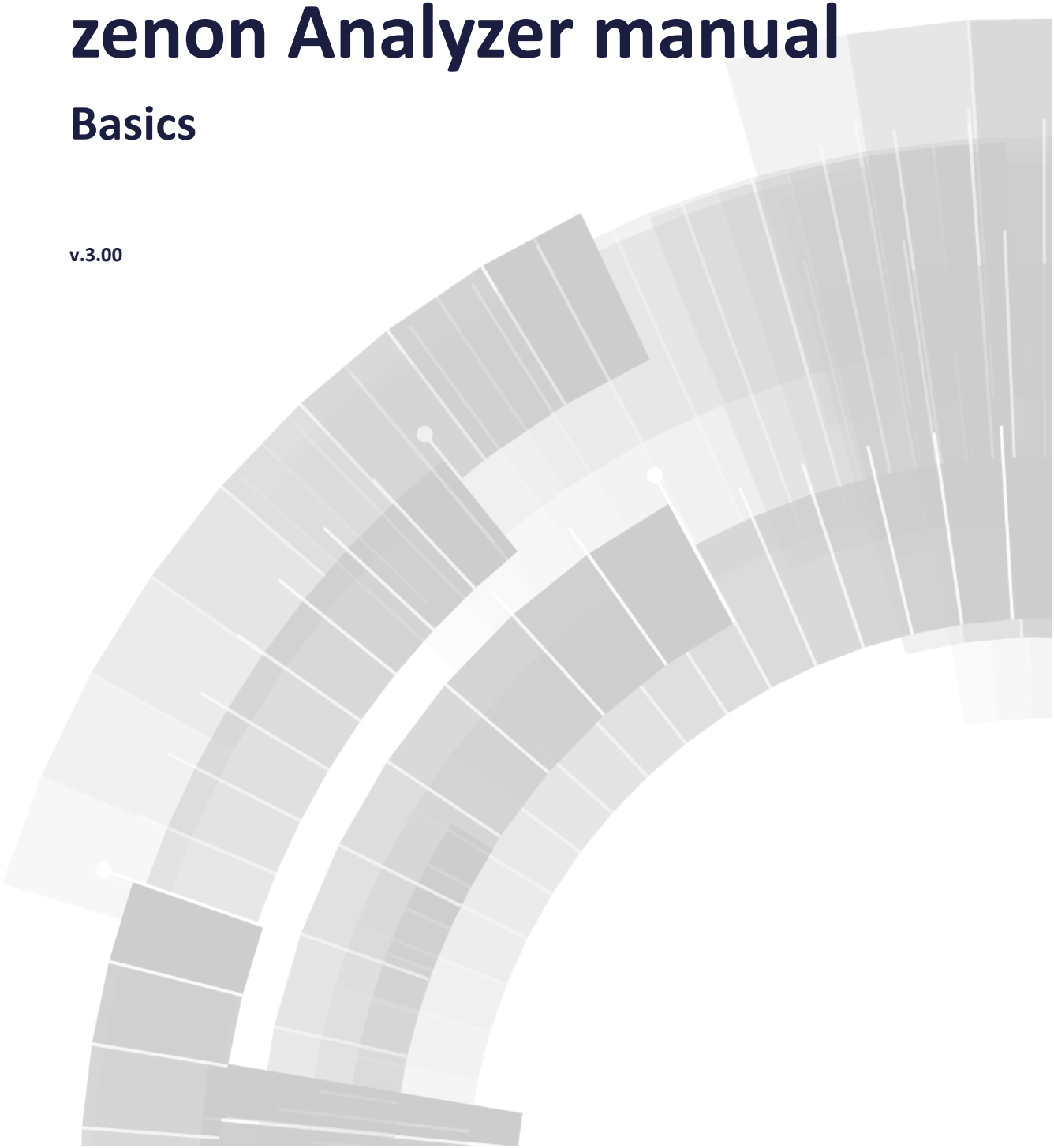
COPA-DATA
do it your way

zenon Analyzer manual

Basics

v.3.00



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 (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. Basics

The zenon Analyzer uses data from different, independent and not cross-linked systems. Data from heterogeneous environments are joined and evaluated.

3. Upgrade information

Note when switching to a version prior to version 3.00:

ACTIVATION NUMBER

For version 3.00, the algorithm was amended for the creation of the activation number. Activation numbers for zenon Analyzer versions 2.xx are no longer valid for versions from 3.00.

EXPORT WIZARD FOR ANALYZER 3.00

The wizard for the export of metadata from zenon was amended and is now available as **Export Wizard for Analyzer 3.00**. It works with zenon from version 7.11 SP0 for zenon Analyzer 3.00.

LICENSING IN WORKGROUPS

zenon Analyzer can now also be licensed in workgroups. For details, read the **Licensing in workgroups** (on page 40) chapter.

MANUAL DATA EDITOR

The **Manual Data Editor** has been revised completely.

The following were changed most of all:

- Operation:
  Configuration is now carried out using several tabs.
- Naming of norms:
  The previous **norms** have now been labeled **standards**.
- New: Degree days.
  Degree days can now also be configured and linked.
- Variable linking:
  Variables are linked in a separate tab. The following can be linked to each variable:
  - A price
  - A degree day
  - Several standards
- ActiveX control:
  The possibility of starting the Editor using an ActiveX control, such as in zenon, has been removed.

NEW CONTROL FOR REPORTS

For all report templates that use equipment models, there is a new control available - Equipment model - expanded levels. It allows, in ZAMS, the setting of how far levels of the equipment model are open during configuration in the Report Launcher.

SQL SERVER 2016 AND NEW INSTANCE ZA3

MS SQL Server 2016 is used as an SQL server for the database.

The instance name for the database of zenon Analyzer version 3.00 is **ZA3**. This is issued as fixed and cannot be changed.

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.

HYDROELECTRIC POWER PLANT ANALYSIS THEME UPDATED

The Stored Procedures for reports from the hydroelectric power plant theme was changed.

In order for existing reports to be able to be used, they must be prepared again. In doing so, the query about overwriting elements must be responded to with yes.

3.1 NVARCHAR(MAX) data type for transfer parameters with list character

ZAMS now creates, for UDFs and SPs that serve to transfer a value list, the respective parameters with the data type `NVARCHAR(MAX)`. This concerns, for example, equipment group multiple selection, variable multiple selection, etc.

The following transfer parameters now have the data type `NVARCHAR(MAX)` (grouped according to SP/UDF):

- Alarm_Aggregate_Class
  - ProjectIDs
  - AlarmClasses
  - GroupPreFilter
- Alarm_Aggregate_Class2
  - ProjectIDs
  - AlarmClasses
  - GroupPreFilter
- Alarm_Aggregate_Comment
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_Aggregate_Comment2
  - ProjectIDs

- ClassPreFilter
- GroupPreFilter

- Alarm_Aggregate_Equipment
  - ProjectIDs
  - EquipmentIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_Aggregate_Equipment2
  - ProjectIDs
  - EquipmentIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_Aggregate_Group
  - ProjectIDs
  - AlarmGroups
  - ClassPreFilter
- Alarm_Aggregate_Group2
  - ProjectIDs
  - AlarmGroups
  - ClassPreFilter
- Alarm_Aggregate_Project
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_Aggregate_Project2
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_GetClassReferenceList
  - ClassIdList
- Alarm_GetGroupReferenceList
  - GroupIdList

- Alarm_List
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_List_Comment
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_List_Equipment
  - ProjectIDs
  - EquipmentIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_MostLong
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_MostLong2
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_MostLong_Equipment
  - ProjectIDs
  - EquipmentIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_MostLong_Equipment2
  - ProjectIDs
  - EquipmentIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_MostOften

- ProjectIDs
- ClassPreFilter
- GroupPreFilter

- Alarm_MostOften2
  - ProjectIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_MostOften_Equipment
  - ProjectIDs
  - EquipmentIDs
  - ClassPreFilter
  - GroupPreFilter
- Alarm_MostOften_Equipment2
  - ProjectIDs
  - EquipmentIDs
  - ClassPreFilter
  - GroupPreFilter
- Archive_GetAggregatedData
  - Variables
- Archive_GetDynamicAggregatedTrendData
  - Variables
- Archive_GetPlainTrendData
  - Variables
- ArchiveEx_GetAggregatedEquipmentCostData
  - Equipments
  - Projects
- ArchiveEx_GetAggregatedEquipmentTrendData
  - Equipments
  - Projects
- FNB_LossTimesLotHistory
  - PalletFilterValues
  - CrateFilterValues

- BottleFilterValues
- TankFilterValues

- FNB_OeeData
  - PalletFilterValues
  - CrateFilterValues
  - BottleFilterValues
  - TankFilterValues
- FNB_OeeLotHistory
  - PalletFilterValues
  - CrateFilterValues
  - BottleFilterValues
  - TankFilterValues
- FNB_WaterfallData
  - PalletFilterValues
  - CrateFilterValues
  - BottleFilterValues
  - TankFilterValues
- HppEventCounters
  - ActivePowerRanges
  - RpmRanges
- ISO50001_GetCarpetPlotData
  - Variables
- ISO50001_GetEquipmentLoadDurationCurveData
  - Projects
  - Equipments
- ISO50001_GetLoadDurationCurveData
  - Variables
- LineAnalysis_GetGanttData
  - Projects
  - Meanings
- ListAlarmClasses
  - ActiveClasses

- ListAlarmGroups
  - ActiveGroups
- ListArchivesForProjects
  - Projects
- ListEquipmentTree_ChildMeanings
  - RequiredVariableMeanings
- ListEquipmentTree_Gantt
  - Projects
  - Meanings
- ListEquipmentTree_Meanings
  - RequiredVariableMeanings
- ListEquipmentTree_MeaningsAndChildMeanings
  - RequiredVariableMeanings
  - RequiredVariableChildMeanings
- ListEquipmentTree_MeaningsWithPrefix
  - RequiredVariableMeanings
  - RequiredVariablePrefixMeanings
- ListVariablesArchiveEx
  - ProjectIDs
  - EquipmentIDs
- ListVariablesForArchives
  - Archives

3.2 Connection security

Communication in zenon Analyzer can now be carried out in encrypted form. With the exception of encryption, the communication is to the **Connector Container**. For the secure connection, the respective components must be of version 3.00 or higher.
Configuration is via ZAMS and is used to establish a connection and for communication.

ENCRYPTION SERVICES

Service	Server	Client
SQL server	Decides on encryption.	No configuration necessary.
Report Server	Decides on encryption. The server needs a certificate.	Clients for Report Launcher web server must use the URL for connection (HTTP or HTTPS).
License service	Decides on encryption.	Clients need the connection password. A change password is required for authentication in the event that changes are made using ZAMS or the migration tool. These passwords can be saved with connection profiles. Clients without a user interface read their configuration from the entries for the license service. Note: Saved passwords can only be reused for unchanged PC hardware and the same Windows user.

You can also create the certificates required for encryption yourself.

Information

*For report developers, there is a tool that can be used to reset the configuration. For details, see the **zenon Analyzer for developers** manual; **Tool: Analyzer Security Configuration** section.*

PROTOCOLS AND ENCRYPTION

Overview of services and their encryption:

Service/connection	Protocol	Encryption	Authentication
License service	TCP	AES 256 Hashes: SHA 256	Password. ▸ Server: Passwords are encrypted depending on the hardware when saving. ▸ Applications: Passwords can be saved as an option and are encrypted depending on the hardware and the user.
SQL Server Instance	TCP	SSl	Windows user (recommended) or separate password for SQL server.
Reporting services service	HTTP	SSl	Windows users.
SQL server instance connection to **connector container**	TCP	none	Recommendation: In the firewall before the Runtime server, only allow communication via port 50778 (**connector container**) to clients that need it.

OPERATION WITHOUT ENCRYPTION

If zenon Analyzer is operated without encryption activated, the following is recommended:

- No Internet connection for computers with databases.
- No Internet connection for license server.
- Remote access via VPN only.

3.3 Dynamic normalization and custom formulas

Changes to tables were made for dynamic normalization. In addition, the calculation for custom formulas was enhanced.

DYNAMIC NORMALIZATIONS: EXPANSION OF THE NORM TABLE AND PRICE TABLE

The **NORM** table for dynamic normalization was replaced with three new tables:

- **NORM_DEFINITION**: Contains the definitions of the norm curves.
- **NORM_VALUES**: Contains the value lists of the norm curves.
- **VARIABLENORM**: Contains the allocation of the norm curves to the variables.

The **PRICE** table for dynamic normalization was replaced with three new tables:

- **PRICE_DEFINITION**: Contains the definition of the price curves.
- **PRICE_VALUES**: Contains the value lists of the price curves.
- **VARIABLEPRICE**: Contains the allocation of the price curves to the variables.

CONVERSION

The following happens when converting the database from zenon Analyzer 2.20 to 3.00:

- The new tables are created
- Values of old tables are transferred to new tables:
- Old tables are deleted

Process for transfer of values: A new curve is defined for variables in the old tables that have the same curve. All variables refer to this curve. The amount of data is thus minimized.

AMENDING REPORTS

To keep existing reports compatible:

1. Provide an example of each report concerned again after migration of the database via ZAMS.
2. Activate the option to overwrite the SQL elements.

FORMULAS: ENHANCEMENT OF THE CUSTOM FORMULAS

The dialog for the configuration of formulas was enhanced with tabs for **standard fields** and **temperature normalization fields**. To do this, stored procedures were enhanced and new UDFs were added.

Existing reports with custom formulas must be converted for the new version.
This concerns the following report templates:

- Custom Formula Trend
- Custom Formula Trend Comparison
- Custom Formula Aggregated Trend
- Custom Formula Aggregated Trend Comparison
- Custom Formula Aggregation
- Custom Formula Aggregation Comparison
- Formula based Efficiency Report
- Formula based Efficiency Comparison Report

There are two methods available for the conversion. They are different for:

- Reports that were not edited in the Report Builder
- Reports that must also be converted for the changes in the Report Builder

With both methods, it is important that the SQL elements must be overwritten in ZAMS.

REPORTS WITHOUT SUBSEQUENT EDITING IN THE REPORT BUILDER

To convert reports that were not edited in the Report Builder:

1. Open all affected reports in ZAMS.
2. Ensure that all elements are overwritten during preparation:
   - Report on the hard disk
   - Report on the server
   - SQL elements
3. Prepare all reports.

REPORTS WITH CHANGES IN THE REPORT BUILDER

To convert reports that were edited in the Report Builder:

1. In ZAMS, for each report, open a report that is the same type as the report concerned.
2. Ensure that reports on the server are not overwritten.
3. Ensure that all SQL elements are overwritten during preparation.
4. Prepare all reports.
5. Open all reports concerned in the Report Builder.
6. In the main Datasets, open the properties and click on **Update fields**. (you may need the access data for access to the SQL-Server instance.)

   Main datasets:

   - **IndicatorData**
   - **IndicatorData1**
   - **IndicatorData2**
   - **EfficiencyData**
   - **EfficiencyData1**
   - **EfficiencyData2**
7. For the **@Norms** parameter, enter **=""** as a value expression.
8. For the **@TemperatureNormalizations** parameter, enter **=""** as a value expression.
9. Save the report.

3.4 Renaming report templates and display of data

A number of report templates have been renamed. The forms of data display were also amended in the process.

REPORT TEMPLATES

Amended report templates in the **Extended Historian analysis** theme:

Up to version 2.20	From version 3.00
Trend per Variable	**Historian Aggregated Trend with Equipment Group and Variable Selection**
Trend per Variable Comparison	**Historian Aggregated Trend Comparison with Equipment Group and Variable Selection**
Trend per Equipment Group	**Historian Aggregated Trend per Equipment Group**
Trend per Equipment Group Comparison	**Historian Aggregated Trend Comparison per Equipment Group**
Relative Trend per Variable	**Relative Historian Aggregated Trend with Equipment Group and Variable Selection**
Relative Trend per Variable Comparison	**Relative Historian Aggregated Trend Comparison with Equipment Group and Variable Selection**
Relative Trend to Standard	**Relative Historian Aggregated Trend with Equipment Group and Variable Selection to Standard**
Relative Trend to Standard Comparison	**Relative Historian Aggregated Trend Comparison with Equipment Group and Variable Selection to Standard**
Distribution per Variable	**Relative Historian Aggregation with Equipment Group and Variable Selection**
Distribution per Variable Comparison	**Relative Historian Aggregation Comparison with Equipment Group and Variable Selection**
Cost Distribution per Variable	**Cost Aggregation with Equipment Group and Variable Selection**
Cost Distribution per Variable Comparison	**Cost Aggregation Comparison with Equipment Group and Variable Selection**
Cost distribution per Equipment Group	**Cost Aggregation per Equipment Group**
Cost distribution comparison per Equipment Group	**Cost Aggregation Comparison per Equipment Group**

DATA REPRESENTATION

The display of data for the **Extended Historian analysis** has been enhanced. The following is now available:

- Line chart and grouped table
- Line chart and pivot table
- Line chart and table
- Bar chart and grouped table
- Bar chart and pivot table

- Bar chart and table
- Line chart
- Bar chart
- Grouped table
- Pivot table
- Table

> **Attention**
>
> Note for the renaming:
>
> - The previous **table** has been renamed to **grouped table**.
> - A **table** was introduced as a flat table.

4. Technical basics

The zenon Analyzer:

1. acquires data
2. compresses data
3. manages meta data such as equipment structure
4. manages templates
5. manages access rights and authorizations
6. calculates evaluations
7. distributes evaluations to Clients

> **Attention**
>
> Variable names must not contain two or more consecutive spaces. If several consecutive spaces are included, this can lead to a Javascript error when called up in the Report Launcher (**Error 500**).

GENERAL REQUIREMENTS

zenon Analyzer needs for:

- the creation and management of reports:

- An SQL Server 2016 database and
- the SQL Server 2016 reporting services

- the display of reports: Browser

A good knowledge of SQL and MS Report Builder 3.0 is required in order for you to create your own reports.

For details about the technical requirements see chapter Technology (on page 22).

HARDWARE AND SOFTWARE REQUIREMENTS

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 R2
- Windows Server 2012
- 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 (on page 44) 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 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 7.50.

.NET Framework 4.6.1:

- .NET Framework 4.6.1 has to be already run capable on the target computer in order to end the installation successfully.

DATA PREPARATION

The data preparation (on page 55) is done in several levels. With this data from different sources and formats can be evaluated universally and maintained easily.

DATA STRUCTURES

The data origin either from static project data or from dynamic user data. For details see chapter Data structure.

DATA COLLECTION

The zenon Analyzer accesses data non-invasively via connectors. Source systems need not be reconfigured. The existing infrastructure is embedded in the reporting of the zenon Analyzer independent of the manufacturers. For systems other than zenon 6.x, only a connector container is installed. This installation does not interfere in the Runtime system and does not interrupt the process.

4.1 Technology

In this section you learn about the technically needed requirements for

- Server
- Client
- Data Sources
- Development station

and the supported standards for

- Interfaces

SERVER

SQL SERVER 2016 DATABASE

In the database there are the meta data and possibly also user data saved in SQL. For the query, stored procedures (Level 2 (on page 56)) are executed. They again revert to **user defined functions** for data acquisition and data abstraction. If needed, they load the connector stub which requests the user data from the target system online. In addition there are the **user defined functions** which provide auxiliary functions for the evaluation.

SQL SERVER 2016 REPORTING SERVICES

The reporting services run as web application and as web server provide the Clients with all reports for displaying in the web browser. In addition, the parameters for the data source, reports, etc. are set using the **Report Launcher** web front end.

The path to **Report Launcher** is: **http://[computer name]/Reports_za3.**

REPORTING LICENSE SERVICE (ZRSLICSRV)

The reporting license service checks the CodeMeter dongle and the license (on page 37) available at the Server and forwards the licensing information to all involved components. It also has the list of all Client leases.

DATA SOURCE

CONNECTOR CONTAINER

On all computers which can server as data source, the connector container together with its different connectors must be installed and started. The TCP port of the connector container must be reachable from outside.

DEVELOPMENT STATION

ANALYZER EXPORT WIZARD

The Analyzer Export Wizard is integrated in the zenon Editor and is used to import the metadata to the SQL Server 2016 database. The wizard offers full support for zenon 7.xx. Older versions of the zenon Editor are not supported.

INTERFACES

The zenon Analyzer supports the following interfaces:

- zenon Runtime 5.50, 6.x, 7.x
- SQL

4.1.1 Client

There must be a web browser on the client to display and configure reports.

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.

DOUBLE CLICK IN THE TREE STRUCTURE FOR EQUIPMENT MODEL DEPENDENT ON BROWSER

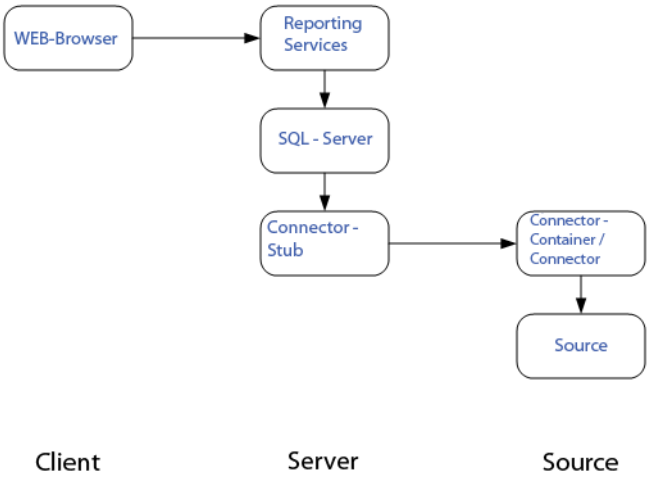
Different browsers react differently to a double click on a node in the tree structure:

- 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.

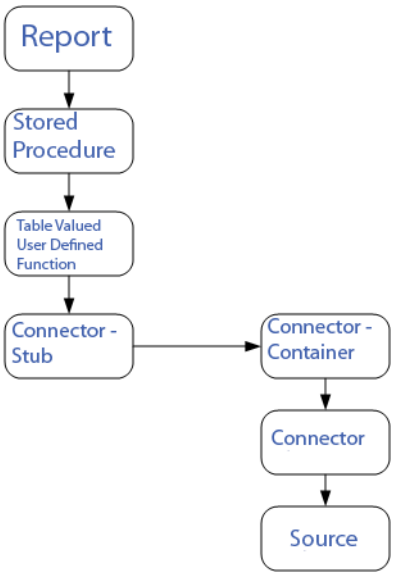
4.2 Architecture

The zenon Analyzer links data from different, heterogeneous sources to valid reports in real time. The reports react dynamically to data base changes.

COMMUNICATION FROM PROCESS POINT OF VIEW



COMMUNICATION FROM DATA POINT OF VIEW



ZENON ANALYZER

The zenon Analyzer consists of:

- Data sources

- Connectors to the data sources
- Container for connectors and data harmonization
- Data filing
- Report Builder with filter and calculations
- zenon Analyzer Management Studio for creating and administering reports
- Web Server
- User interface at the Client for calling up and managing reports at the Client

PROCESSES

Reports are configured and published by administrators or users.

Reports can also be created by the administrator using Microsoft Report Builder 3.0. Prerequisite is a wide knowledge in SQL. For information about MS Report Builder refer to the corresponding help of the Microsoft Report Builder. End-users call up reports via the interface of their Client.

Data required for the report is collected via connectors and harmonized before use. With this, reports are also meaningful for different sources, time zones, etc.

4.3 Time formats

Three time formats are used:

- Local time: is used in reports
- UTC: is used in abstracted historical and current values and in database tables
- Unix time: is used in SQL tables

LOCAL TIME

Queries in the report and the display of results is done in local time.

UTC

Abstracted historical and current values are stated in UTC. For the display in the reports it is converted to local time.

UTC means Coordinated Universal Time. The time unit is second. UTC is the uniform basis for the international time determination and is made available to the public via time senders and other time services. Dependent on the time zone certain time periods must be added or subtracted to or from

UTC. This time period can vary one hour because of the day light saving time.
Example:

Country	Local time
Alaska	UTC -9
Australia, Queensland	UTC +10
Bulgaria	UTC +2
United Kingdom	UTC
Korea	UTC +9
Central Europe (CET)	UTC +1
Central Europe (CET) Daylight Saving Time	UTC +2
Saudi Arabia	UTC +3
USA East coast	UTC -5
United Arabic Emirates	UTC +4

CONSEQUENCES TO THE CONFIGURATION

Engineered date and time mean different date and time depending on the execution location of the Runtime.

For example: In the Editor you engineer in the PFS for the execution of a function in time zone **UTC +1** the local time `14:00 o' clock`. After transferring the files to a Runtime in tiem zone **UTC +10**, the function is carried out at `23:00 o' clock`. Unix time

In the SQL databases Unix time is used, e.g..:

- evacuated archives
- exported archives
- exported alarms
- exported CEL

PROCEDURE

- Query in reports are dispalyed in local time.
- The hand over from report to the table valued user defined functions is done in UTC.
- Query to SQL are converted to Unix time.
- Results are converted to UTC and displayed in the report as local time.

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

Key:

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

The **zrsGetCompressionIntervalIsCarpetPlot** UDF is used for the calculations.

4.4 Prerequisites

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
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Web browser:

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

Recommended HMI/SCADA system:

- zenon 7.50.

.NET Framework 4.6.1:

- .NET Framework 4.6.1 has to be already run capable on the target computer in order to end the installation successfully.

CONNECTORS

The following applies for connectors:

- Timeout: 5 minutes (independent of report timeout)
- 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 on several projects can be created, except when using filters for shifts or lots. In this case, reports are limited to one project.

> **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

- Days per month 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 with zenon from version 7.10 SP0. There is a separate wizard available for each supported version of zenon.

5. Installation and updates

The installation of zenon Analyzer consists of several components:

- Analyzer Server:
  Central SQL server.
  Note: Before installation, the IIS service (on page 44) must be installed on the operating system.
- zenon Analyzer Management Studio:
  Tool for the administration of zenon Analyzer and to create reports. It must be installed on the engineering computer:

You can find the hardware and software requirements in the Prerequisites (on page 28) chapter.

NOTE:

- .NET Framework 4.6.1
  `.NET Framework 4.6.1` has to be already run capable on the target computer in order to end the installation successfully. Otherwise, an error notification from the <CD-ZRS> setup will show up and the installation process will be canceled.

- Remote installation
  The installation medium must be on the local computer. Network drives may not be available punctually for a reboot during installation. For remote installations and virtual installations, copy the content of the installation medium to a temporary folder on the computer and start the setup.

> **Attention**
>
> *Ensure that you have the appropriate licenses (on page 37).*

NOTE FOR WIZARDS

There are three wizards available from version 7.10 for zenon Analyzer for use with the SCADA system zenon:

- **Analyzer Export Wizard**
- Meaning and Waterfall Chart Wizard
- Sankey Wizard

Wizards have no longer been installed with <CD_ZRS since zenon Analyzer 2.20 >. From zenon 7.20, installation is carried out with the installation of zenon. For zenon versions 7.10 and 7.11, the wizards can be installed or updated manually using build setups.

To install wizards manually:

1. Open the **\zenon_Build_Setups** folder on the zenon Analyzer installation medium.
2. Select the desired build.
3. Start the installation.

Attention: With a build update, the complete version of zenon on the computer is updated to the selected build. Only builds for already-installed versions can be executed.

CARRYING OUT THE INSTALLATION

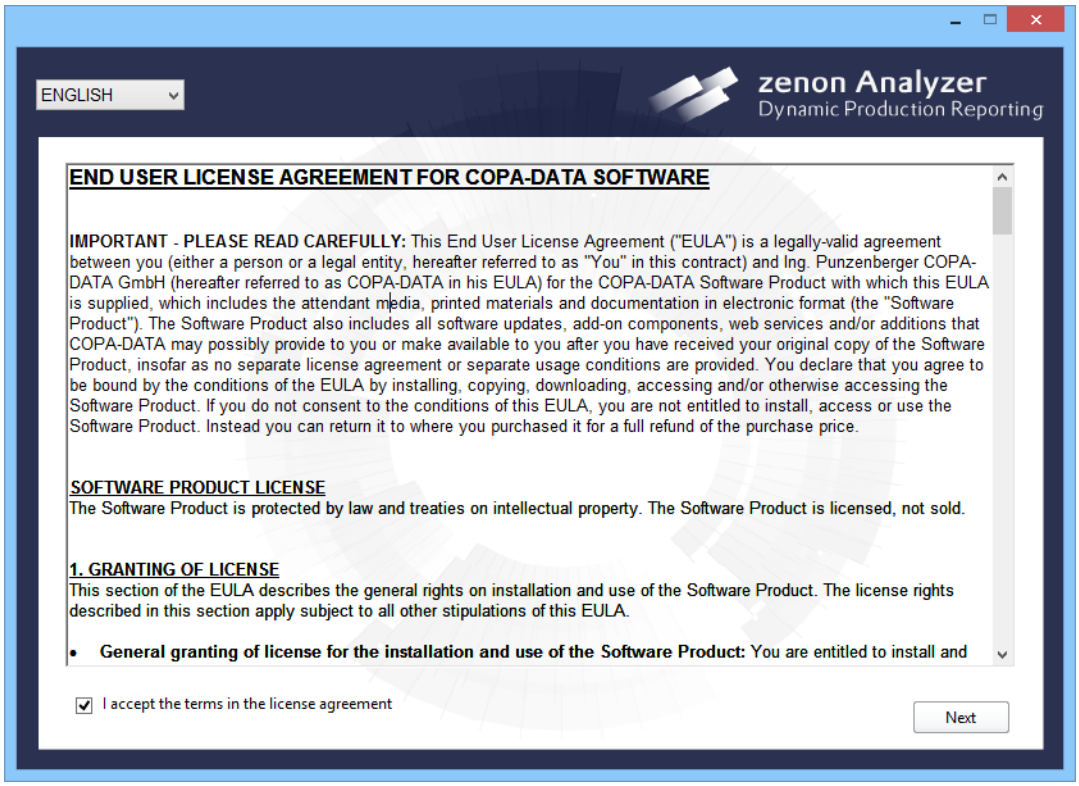
To install zenon Analyzer components:

1. Ensure that the components required for installation are already installed on the system.
   - General: .NET Framework 4.6.1
   - Server: IIS service (on page 44)
2. Connect the installation medium to the computer or copy its contents to a local folder.
   If Autorun does not automatically start the setup, use the file named `start.exe`.
3. Select the desired language from the drop-down list
4. Accept the license agreements

5. Click on the **Next** button.
6. Select the desired components
7. Click on the **Next** button.

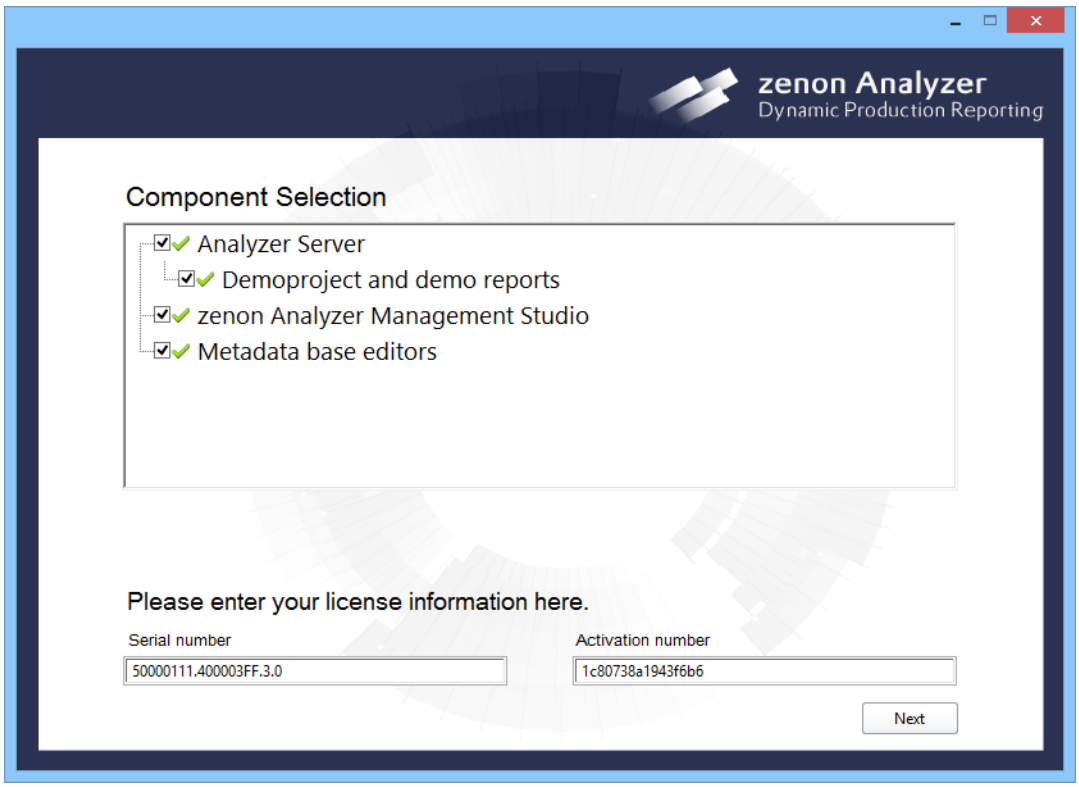
   The installation or the update will start.
8. Follow the instructions given to you by the installation wizard.

START WINDOW



Parameters	Description
Drop-down list "Language"	Selection of the language for the installation. The following are available: ▸ German ▸ English ▸ French ▸ Italian ▸ Spanish
License agreements	License agreement with conditions of use for zenon Analyzer. For installation, the requirements must be accepted by clicking on the **I accept the conditions of the license agreement** checkbox.
Next	Switches to the next step of the installation. Only active if the **license agreements** have been accepted.

MODULE SELECTION

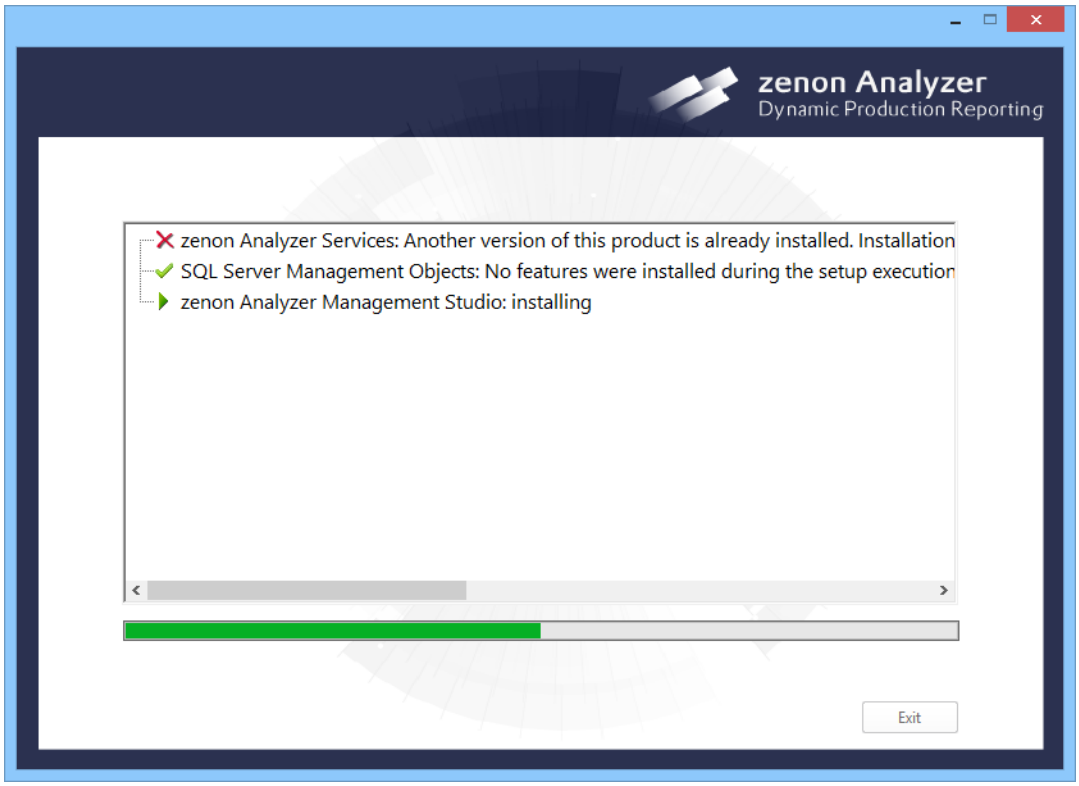


Parameters	Description
Module selection	Selection of the components to be installed by activating the corresponding checkbox. ▸ **Analyzer Server**: Central SQL server. Requirement: 64-bit operating system and installed IIS service. ▸ Demo project and demo reports: Example database Requirement: 64-bit operating system and zenon 7.50. ▸ zenon Analyzer **Management Studio**: Tool to create and administer sever connections and reports. Pre-requisite: 32-bit or 64-bit operating system. ▸ Metadata database editors
Serial Number	Entry of the serial number for licensing (on page 37). Only present if the Analyzer Server is to be installed. If there is already a serial number on the system, this is entered automatically.
Activation number	Entry of the activation number. Only present if the Analyzer Server is to be installed. If there is already an activation number on the system, this is entered automatically.
Next	Starts the installation. Only active if modules are selected for installation.

SYMBOLS MODULE SELECTION

Symbol	Meaning
✓	Installation can be carried out.
✗	Installation not possible.

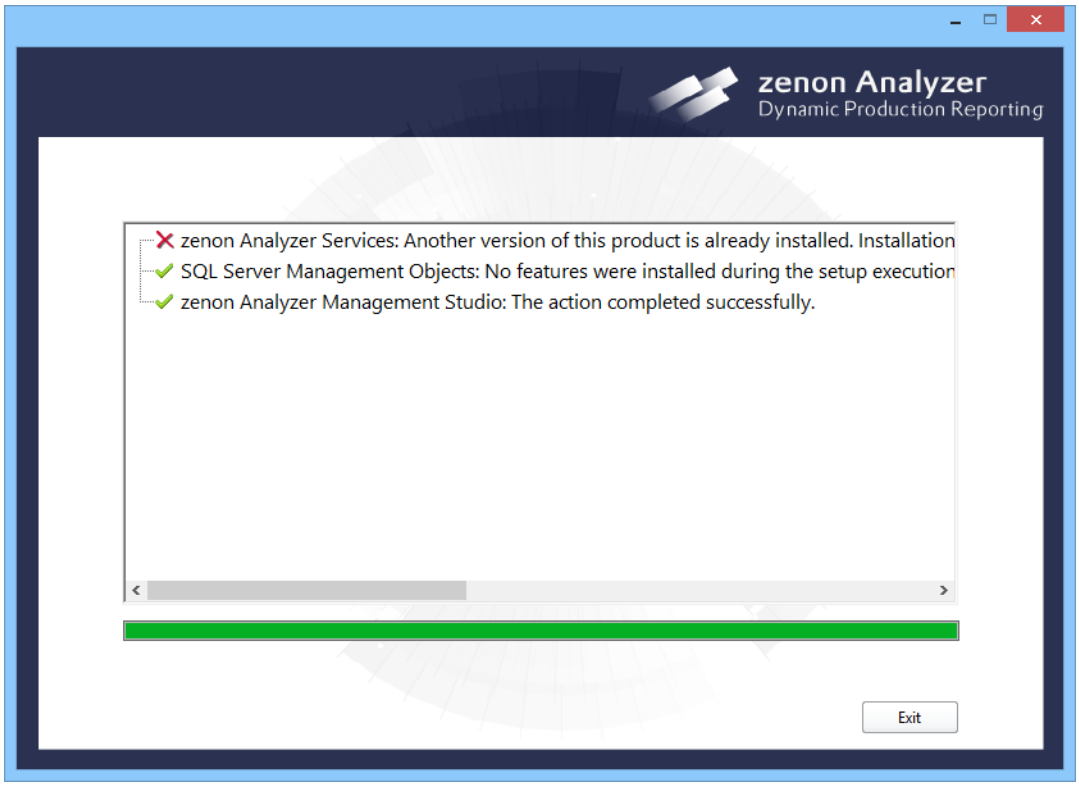
INSTALLATION PROGRESS



The course of installation is shown in its own window with symbols:

Symbol	Meaning
	Not yet installed
	Is currently being installed
	Installation OK
	Installation failed

After successful installation of all desired components, end the installation wizard by clicking on the **End** button.



INSTALLATION ON THE CLIENT

Only a current browser is needed on the client. The language that is set in the browser determines the language for the Report Launcher. The language for zenon Analyzer Management Studio is specified in the ZAMS options.

5.1 Licensing

In order to license the zenon Analyzer a CodeMeter dongle is a prerequisite.

There are the following restrictions without a valid license:

- No external access via the default access site is possible.
- There is no connector functionality
- Report templates and reports cannot be used.
- ZAMS only provides the following functionality without a license:
  - Information on servers and licenses
  - Input of licenses
  - Start **Metadata Editor**
  - Start **Manual Data Editor**
  - Start **Migration Tool**
  - Configuration of color scheme
  - RDL template
  - Configuration of settings
  - Displays of version information
  - Opening the help

Entry of the license data is carried out during installation for the Analyzer Server and via the zenon Analyzer Management Studio or the zenon licensing for all other components as required.

Note: A new zenon Analyzer license is only accepted if you have enough client licenses for all users with a dedicated license.

LICENSING IN WORKGROUPS

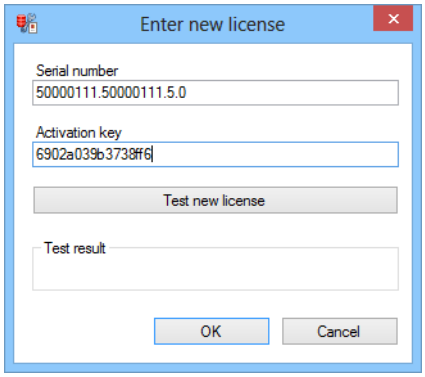
For licensing for computers that are not in domains, but in Windows workgroups, note the procedure in the Licensing in workgroups (on page 40) chapter.

LICENSING VIA ZAMS - ZENON ANALYZER MANAGEMENT STUDIO

To enter new license data:

1. Select, in the **Analyzer Server** menu or in the **Display license** dialog, the **Enter new license** command
2. the drop-down list with the license information is opened
3. enter **serial number** and **activation number**
4. Click on **Check new license**
5. If the result is positive, click on **OK** to activate the license

ENTER DIALOG LICENSE



Parameters	Description
Serial number	Entry of the serial number.
Activation key	Entry of the activation key.
Test new license	Clicking on this button tests inputs before they are written to the license server, to see if: ▸ License data entered has the correct syntax ▸ a license can be occupied on a CodeMeter dongle with the data entered ▸ The activation key corresponds with the serial number In order for the test to be started, both **serial number** and **activation key** must have been entered.
Test result	Displays the test result of **Test new license**.
OK	Writes the license entered to the license service on the Analyzer server and closes the dialog. The result of writing the license is displayed in the output window. In order for the license data to be written, both **serial number** and **activation key** must have been entered.
Cancel	Closes the dialog without writing data to the license service.

> **Attention**
>
> *If incorrect license data is entered, the access to the Analyzer server is blocked for all clients. Always check the new license data by clicking on the **Test new license** button before you set the license by clicking on **OK**.*

ENTRY IN ZENANALYZER.INI

The license information are saved in file **zenAnalyzer.ini** (on page 48) in the zenon system folder.

- Section **[DEFAULT])**
  - Entry **SERIAL7=**
  - Entry **ACTIVATIONKEY7=**

The CodeMeter check and management of simultaneous access is done via service `zrsLicSrv`.

For details about licensing and the CodeMeter dongle, see the Licensing manual, CodeMeter chapter.

5.1.1 Licensing in workgroups

Licensing for workgroups is different from the licensing for domains.

REQUIREMENTS

For licensing within workgroups, the zenon Analyzer License Service must work in Workgroup mode. To do this, the following requirements must be fulfilled:

- The computer that acts as the Analyzer Server must be a member of the workgroup.
- All users of the workgroup must also exist on the Analyzer Server.
- The license service on the Analyzer Server must run in the user context of a user of the workgroup. Other computers of the workgroup are thus recognized as members of the group.

CHANGING LICENSE SERVICE USER CONTEXT

This is how you change the user context for the license service:

1. Open the administration of the local services.
2. Go to the **zrsLicSrv** service.
3. Stop the service.
4. Click on **Properties** in the context menu of the service.

   The dialog with the properties of the service is opened.
5. Open the **Log in** tab.
6. Activate the **This account** radio button.
7. Enter the user name, password and password confirmation for the desired user.
8. Close the dialog by clicking on **OK**.
9. Start the service.

5.2 Uninstallation of zenon Analyzer version 1.6 and 2.0

GENERAL RECOMMENDATIONS

- Test installations: These are best installed in a virtual environment.
- Prerequisites: Can also be required by other programs. Only uninstall these if you are sure that they are no longer needed.
- LOG files: Can be deleted in principle.
- Registry: Changes to entries should only be made by qualified people.

UNINSTALLATION

Depending on the components installed, the uninstallation processes are different for:

- zenon Analyzer 1.6 (on page 41)
- zenon Analyzer 2.0 (on page 43)

5.2.1 Uninstallation of zenon Analyzer 1.6

INSTALLED COMPONENTS

The installation of zenon Analyzer 1.6 consists of the prerequisites and four main categories.

PREREQUISITES

- Microsoft Visual C++ 2010 Redistributable Package (x86)

CATEGORIES

- Analyzer (Server)
- Analyzer Connector
- Analyzer Wizard (can only be installed if the zenon 6.51 Editor is already present)
- Analyzer Assistant

UNINSTALLATION

ANALYZER (SERVER)

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer`
- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer`: License
- Delete folder: **C:\ProgramData**\COPA-DATA**zenonAnalyzer**

ANALYZER CONNECTOR

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer`: Connectors
- Delete folder: `C:\Program Files (x86)\Common Files\COPA-DATA\Connectors`
- Delete the registry entry:
  `[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows\CurrentVersion\Run]`
  `COPA-DATA Connector=C:\Program Files (x86)\COPA-DATA\zenonAnalyzer\zrsConnector.exe`

ANALYZER EXPORT WIZARD

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer`: **Export Wizard**
- Delete folder:
  `C:\ProgramData\COPA-DATA\zenon651\WizardsVSTA\ZRS_MetadataExport`
- Configure the file
  `C:\ProgramData\COPA-DATA\zenon651\WizardsVSTA\wizards.ini`:

  [DEFAULT]
  COUNT=x -> decrement to `x-1`
  [WIZARD_X] -> delete complete entry with all sub-lines

ANALYZER ASSISTANT

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer`: **Report_Assistant**
- Delete folder: `C:\Program Files (x86)\COPA-DATA\zenon Analyzer`

5.2.2 Uninstallation of zenon Analyzer from version 2.0

INSTALLED COMPONENTS

The installation of zenon Analyzer from version 2.0 consists of four main categories:

- Analyzer (Server)
  - Demo projects
- ZAMS (zenon Analyzer Management Studio)
- Analyzer Connector
- Analyzer Wizard

UNINSTALLATION

ANALYZER (SERVER)/DEMO PROJECTS

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer:` **Server**
- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer:` **License**
- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer:` **Demo**
- Delete folder: `C:\ProgramData\COPA-DATA\zenonAnalyzer`
- Delete the registry entry: `HKEY_LOCAL_MACHINE\SOFTWARE\COPA-DATA\zenonAnalyzer`

ZENON ANALYZER MANAGEMENT STUDIO (ZAMS)

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer:` **Management Studio**
- Delete folder: `C:\ProgramData\COPA-DATA\zenonAnalyzer`
- Delete the registry entry: `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\COPA-DATA\zenonAnalyzer`

ANALYZER CONNECTOR

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer:` **Connectors**
- Delete folder: `C:\Program Files (x86)\Common Files\COPA-DATA\Connectors`
- Delete the registry entry: `[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows\CurrentVersion\Run]`

```
COPA-DATA Connector=C:\Program Files
(x86)\COPA-DATA\zenonAnalyzer\zrsConnector.exe
```

ANALYZER EXPORT WIZARD

- Uninstall: `Control Panel -> Programs and Features -> zenon Analyzer:` **Export_Wizard**
- Delete folder: **C:\ProgramData**\COPA-DATA**\zenon700\WizardsVSTA\Wizard_Analyzer_Export**
- Configure the file `C:\ProgramData\COPA-DATA\zenon700\WizardsVSTA\wizards.ini:`

  [DEFAULT]

  COUNT=x -> decrement to `x-1`

  [WIZARD_X] -> delete complete entry with all underscores

5.3 IIS Publishing service installation

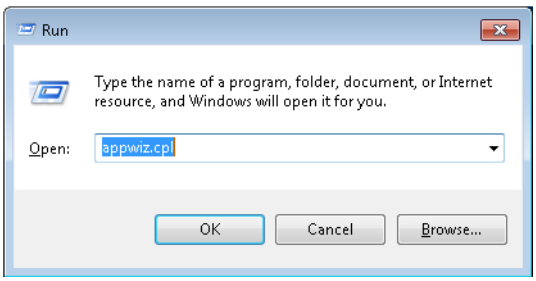
The IIS publishing service must be installed before the installation of zenon Analyzer on the system. The details of the process are different for different operating systems.

WINDOWS 8 AND 8.1

To activate the IIS publishing service:

1. Press the `Windows key + R` keyboard shortcut.

   The dialog to enter a command for the command input is opened.

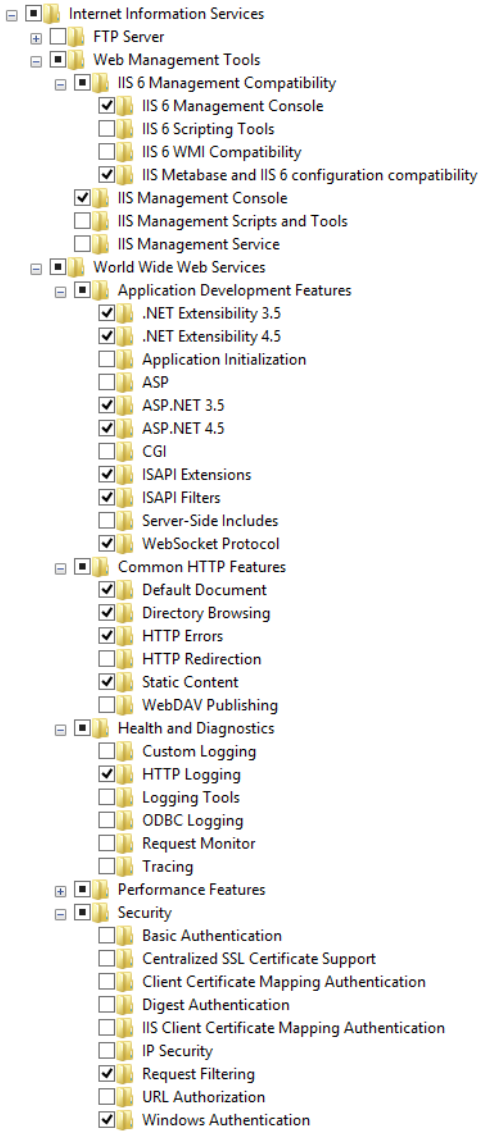


2. Enter `appwiz.cpl` in the input field.

   Click on **OK**.
   A new control panel window to configure programs and **Windows features** is opened.

3. In this window, click on **Turn Windows features on or off**.

The window to select features of the operating system is opened.



4. Expand the **Internet information services** in this node.
5. Activate all **World Wide Web Services** there.
6. Expand the **General HTTP features** node.
7. Activate the **static content**.
8. Expand the **Application development features** node.
9. Activate **ASP.NET 4.5**
10. Expand the **Web administration tools** node.
11. There, activate the **IIS administration console**.
12. Expand the **Security** node.

13. Activate **Windows authentication**.
14. Click on **OK**.

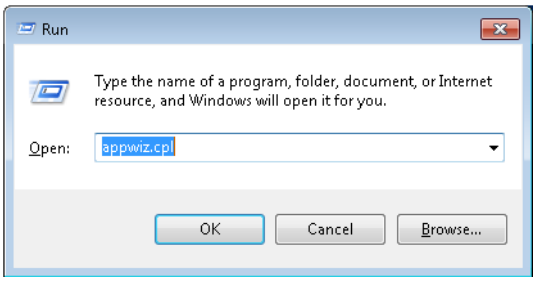
Note: The **WebSocket** protocol must also be activated.

WINDOWS 10

To activate the IIS publishing service:

1. Press the `Windows key + R` keyboard shortcut.

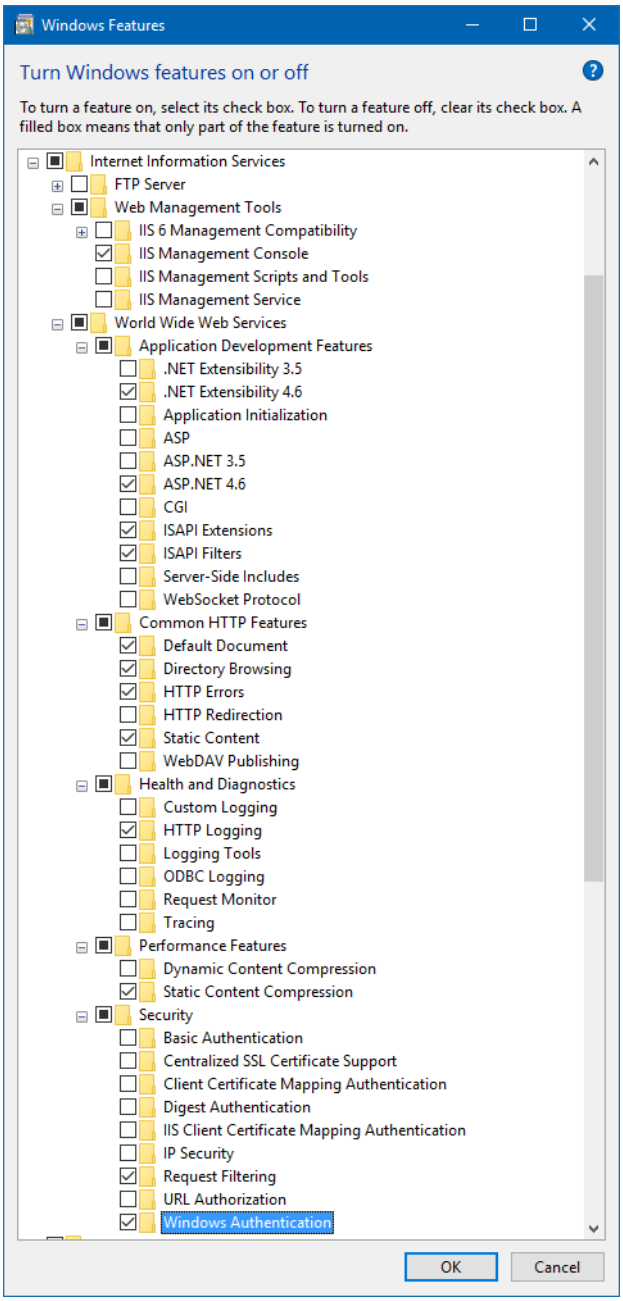
   The dialog to enter a command for the command input is opened.



2. Enter `appwiz.cpl` in the input field.

   Click on **OK**.
   A new control panel window to configure programs and **Windows features** is opened.
3. In this window, click on **Turn Windows features on or off**.

The window to select features of the operating system is opened.



4. Expand the **Internet information services** in this node.
5. Activate all **World Wide Web Services** there.
6. Expand the **General HTTP features** node.
7. Activate the **static content**.
8. Expand the **Application development features** node.
9. Activate **ASP.NET 4.6**

10. Expand the **Web administration tools** node.
11. There, activate the **IIS administration console**.
12. Expand the **Security** node.
13. Activate **Windows authentication**.
14. Click on **OK**.

Note: The `WebSocket` protocol must also be activated.

WINDOWS SERVER 2012 (R2)

Follow the instructions from Microsoft: https://technet.microsoft.com/en-us/library/hh831475.aspx

1. Open the **Assistant to add roles and features** wizard.
2. Go to the **server roles**.
3. Activate the **Webserver (IIS)**.
4. Expand the **General HTTP features** node.
5. Activate the **static content**.
6. Expand the **Security** node.
7. Activate **Windows authentication**.
8. Expand the **Application development** node.
9. Activate:
    - **.NET expandability 4.5**
    - **ASP.NET 4.5**
    - **ISAPI extension**
    - **ISAPI filter**
    - **WebSocket protocol**

6. configuration file zenAnalyzer.ini

Settings for zenon Analyzer are amended in the **zenAnalyzer.ini** configuration file. This documentation contains information for system administrators who want to edit the INI files directly.

You can find the INI file in the following path: `%cd_system%`.
It is only present if the Analyzer Server is installed. If there is only Report Launcher or ZAMS on the system, there is also no **zenAnalyzer.ini**.

Information

Settings should primarily be made using the user interface of zenon Analyzer. Changes to the INI files are reserved for experienced users.

zenAnalyzer.ini contains the following sections:

Section:	Description
[DEFAULT] (on page 49)	General settings. Contains serial number and activation number.
[NETZ] (on page 51)	Settings for connection security.
[**USER_LEVELS]** (on page 51)	Information on users and user authorisations.
[DEDICATED_USERS] (on page 51)	Configuration of dedicated users.
[CONNECTION_ZA2] (on page 52)	Information for connections to version **ZA2** databases.
[CONNECTION_ZAX] (on page 53)	Information for connections to version **ZA3** databases and higher.
[DEBUG] (on page 54)	Activation of debugging.

The sequence of the sections and the entries in the sections can vary.

FORMAT IN WHICH THE INI FILES ARE SAVED

Due to the system, only ANSI and Unicode are supported for reading the INI files.

Attention

UTF-8 format is not supported!

You should therefore always save your INI files as a text file in ANSI or Unicode format.

6.1 General settings [DEFAULT]

General settings for the Analyzer Server instances ZA2 and higher.

These contain the serial number and the activation key. You change these settings in ZAMS using the license product dialog.

Entry	Description
[DEFAULT]	General settings for the ZA2 instance.
SERIAL7=	Serial number for licensing of a version 2.xx server. Is set by the license server. Default: 0000
ACTIVATIONKEY7=	Activation key for activation of the license of a version 2.xx server. Is set by the license server. Default: (empty)
[DEFAULT_X]	General settings for the ZA3 instance or higher. **X** is a placeholder for the respective version of the instance. Example: **[DEFAULT_3]** corresponds to instance ZA3.
SERIALX=	Serial number for licensing of the server from version 3.xx. Is set by the license server. **X** is a placeholder for the respective version. Example: **SERIAL3=** contains the serial number for version 3.xx. Default: (empty)
ACTIVATIONKEYX=	Activation key for activation of the license of the server from version 3.xx. Is set by the license server. **X** is a placeholder for the respective version. Example: **ACTIVATIONKEY3=** contains the activation key for version 3.xx. Default: (empty)

SERIAL NUMBER AND ACTIVATION KEY

These entries are set by the license server if it contains the command to use a new license. As long as the license server is running and has a valid license, these values are not read again. If the license server does not have a license or a valid license on starting, it reads these entries in an interval of 1 minute until it finds a valid license.

If one of the two entries **SERIALX=** or **ACTIVATIONKEYX=** has been amended manually in the INI file, the following situations can result:

- The previously-used license was was invalid.
  The license server automatically reads the new entries at the next attempt to validate the license.
- The previously-used license is valid.
  The license server does not read the new entries automatically.
  There are two methods to ensure that these new entries are read in:
  - Restart the **zrsLicSrv** license server service. This is the recommended method.

- Ensure that the previously-used license becomes invalid.
  You can achieve this by removing the dongle for the previously-used license.
  Attention: Licenses for other applications that use the same dongle thus become invalid, for example zenon Editor or zenon Runtime. These applications are thus stopped.

6.2 Connection security [NETWORK]

Settings for the connection security.

These settings must only be set via ZAMS. To do this, use the **Configure connection security** dialog.

> **Attention**
>
> *Manual changes to these entries in **zenAnalyzer.ini** can lead to no connection to the Analyzer Server, license server or report server being possible any more.*

6.3 User [USER_LEVELS]

Settings for user authorizations.

These settings must only be set via ZAMS. To do this, use the **Analyzer applications access rights** dialog.

> **Attention**
>
> *Manual changes to these entries in **zenAnalyzer.ini** may lead to the connection to Analyzer Server no longer being possible.*

These entries are written by the license server if it receives a corresponding command. The entries are read when the license server starts. Manual changes to the INI file are only taken into account if the license server service **zrsLicSrv** is restarted.

6.4 Dedicated users [DEDICATED_USERS]

Settings for dedicated users with a fixed license.
You change these settings in ZAMS using the **Users with fixed license** dialog.

These entries are written by the license server if it receives a corresponding command. The entries are read when the license server starts. Manual changes to the INI file are only taken into account if the license server service **zrsLicSrv** is restarted.

Entry	Description
[DEDICATED_USERS]	Assignment of fixed license to users of an Analyzer Server instance **ZA2**. Configuration is carried out by means of the following entries: ▸ **DEDICATED_USERS_COUNT=**: Number of dedicated users. ▸ **DEDICATED_USER_X=**: Assignment of licenses to user names in consecutive numbering.
DEDICATED_USERS_COUNT=	Number of dedicated users. Example: **DEDICATED_USERS_COUNT=**4 means that dedicated licenses have been given to four users. Default: 0
DEDICATED_USER_X=	Assigns a dedicated license to a user If the value for **DEDICATED_USERS_COUNT=** is 0, this entry is empty. **X** stands for the consecutive numbering of the users. ▸ Minimum: 0 ▸ Maximum: Value from **DEDICATED_USERS_COUNT=** minus 1 Default: (empty)
[DEDICATED_USERS_X]	Configuration for users of an instance **ZA3** or higher. Corresponds to the configuration in **[DEDICATED_USERS]**. **X** is a placeholder for the respective version of the instance. Example: Entries in the **[DEDICATED_USERS_3]** section configure dedicated licenses for users of an Analyzer Server instance **ZA3**.

EXAMPLE

[DEDICATED_USERS 3]

DEDICATED_USERS_COUNT=3

DEDICATED_USER_0=User1

DEDICATED_USER_1=User2

DEDICATED_USER_2=User3

6.5 Connection to ZA2 [CONNECTION_ZA2]

Entries for the Connector Stubs connection to a Connector Container. These entries cannot be created with a tool. They must therefore be changed manually in the INI file if necessary.

The entries are read if the first Connector function after the SQL Server start that needs a connection with a Connector Conatainer is executed. If these entries are amended, it must be ensured that the Connector Stub uses the new entries. To do this, the SQL-Server instance that is used for **Analyzer 2.xx** must be restarted.

Entry	Description
[CONNECTION_ZA2]	Configuration of the database connection of the Connector Stub components that establish the connection to the Connector Container. These settings only relate to the connection to an Analyzer Server instance ZA2. Connections to other instances are configured by means of the settings in **Connection to ZA3 and higher [CONNECTION_ZAX]** (on page 53).
USER=	User name for the connection. Default: `ReportingUser`
PW=	Password for the connection. The password can be entered as open or encrypted. Note: Entry of an encrypted password is not possible via the INI file. Default: `Copa-Data`
SQLINSTANCE=	Denotes the SQL server instance to which the connection is to be made. Default: `Localhost\ZA2`

6.6 Connection to ZA3 and higher [CONNECTION_ZAX]

Entries for the Connector Stubs connection to a Connector Container. These entries cannot be created with a tool. They must therefore be changed manually in the INI file if necessary.

The entries are read if the first Connector function after the SQL Server start that needs a connection with a Connector Conatainer is executed. If these entries are amended, it must be ensured that the Connector Stub uses the new entries. To do this, the SQL-Server instance that is used for **Analyzer 3.xx** (or higher) must be restarted.

Entry	Description
[CONNECTION_ZAX]	Configuration of the database connection of the Connector Stub components that establish the connection to the Connector Container. These settings only concern the connection to an Analyzer Server instance ZA3 or higher. Connections to instances of version 2.xx are configured using the settings in **Connection to ZA2** [**CONNECTION_ZA2**] (on page 52).
USER=	User name for the connection. Default: `ReportingUser`
PW=	Password for the connection. The password can be entered as open or encrypted. Note: Entry of an encrypted password is not possible via the INI file. Default: `Copa-Data`
SQLINSTANCE=	Denotes the SQL server instance to which the connection is to be made. Default: `Localhost\ZA3`

6.7 Troubleshooting [DEBUG]

Settings for debugging.

These settings can only be changed manually in the INI file.

Parameters	Description
[DEBUG]	Settings for the writing of enhanced LOG entries.
EXTENDEDLOG=	Switches the writing of enhanced log entries off or on: ▸ `0`: off ▸ `1`: on At the time at whch the first log entry is to be written, write protection is still activated. To ensure that the first entry is also written, the license server service **zrsLicSrv** must be restarted. Default: `0`

7. Data preparation

The data preparation is done in several levels. With this data from different sources and formats can be evaluated universally and maintained easily.

- Level 1: Data abstraction (on page 55)
  On the lowest level the data abstraction or data unification is done. It makes sure that the source data are always available in the same format and in the same type for the actual evaluation algorithm.
- Level 2: Compression and calculation (on page 56)
  A level above the actual compression and calculation is done to create the data which should then be displayed in the report. This level is already independent of the data origin and therefore universal.
- Level 3: Report (on page 57)
  The output data of the second level are then displayed graphically in the report as third level. The display in the report in turn is independent of the algorithms necessary for the calculation on the second level. This means that no calculation and no compression is carried out in the report, which exceed the mere display (e.g. formating of local times or similar).

7.1 Level 1: Data abstraction

At data abstraction there are two different categories of data:

1. Engineering data

   They normally remain the same during the Runtime and are called meta data there.
   The metadata is abstracted or harmonized by the import wizard during import into the database. Regardless of their origin they are available in the format in which they are defined in chapter data structure.

2. Runtime data
   The actual Runtime data are those data which are generally used as the base for all evaluations. They are called user data there.

   Runtime data is tapped via connectors. COPA-DATA provides a Runtime connector and SQL connector with zenon Analyzer. Individual additions can be integrated into the connectors by agreement with COPA-DATA.

CONNECTOR CONTAINER

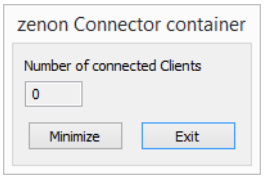
The connector container is an application (EXE) which runs at the source system and which loads and executes the connector plug-ins (DLLs). The connector container is a normal user process (no service)

which is normally started together with the application which should deliver the data. The connector container opens a TCP port and waits for query requests from the connector stub whereon it loads the requested connector plug-in and invokes the fitting access function for the request. The return data is then sent to the connector stub. Several queries from different TCP connections can be executed in parallel if the source system supports this.

In normal operation the connector container is displayed as icon in the task tray and does not have an own main window. Additional status information can be displayed via a status dialog.

You can read more in the manual for report developers in the Connectors chapter.

DIALOG



Parameters	Description
Number of connected Clients	Displays the number of clients connected.
Minimize	Minimizes the dialog into the info area of the task bar.
Exit	Closes the connector container.

RESTART

If the connector container has been closed, it can be restarted by:

- Restarting the computer.
- Manual start.
  - From Windows 8: Task-Manager -> Tab -> Autostart -> Connector-Container -> Open file path-> Double-click on **zrsConnector.exe**.
  - Other operating systems: Open file path-> Double-click on **zrsConnector.exe**.
    32-bit path: %`Program Files (x86)%\Common Files\COPA-DATA\Connectors`

7.2 Level 2: Compression and calculation

All sorts of compression and calculation of the user data prepared in level 1 (on page 55) is carried out in the **Stored Procedures**. If necessary, filter criteria are handed over to them via parameters.

The **stored procedures** are independent of the format of the user data and of the visual display of the result. They contain only the calculation algorithms and the filter methods with regards to the meta data.

So far as it is technical feasible, they are also independent of specific presumptions concerning the meta data; i.e. independent of specific variable names. If this is not possible, the allocation to these fixed meta data parts is implemented as an obvious block at the beginning of the **stored procedures** in order to separate project-specific and universal evaluation part.

7.3 Level 3: Report

The result data generated in level 2 (on page 56) are formatted graphically in an SQL Server 2016 Reporting Services report. There is no calculation in the report itself. Also a direct access to database tables is never done but only to the **stored procedures** from level 2 (on page 56). With this the reports are:

- completely independent of the database structure
- universal and
- interchangeable