# zenon manual

## Tools

**v.7.20**

**COPADATA**
do it your way

# Contents

# 1. Welcome to COPA-DATA help

## GENERAL HELP

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

A range of tools support you for the management, analysis and configuration of zenon:

- ▸ Diagnosis Viewer (on page 6): Allows zenon LOG files to be read and configured.
- ▸ Keyblock Runtime Start (on page 48): Starts zenon Runtime and at the same time blocks all Windows system keys.
- ▸ Online updating of the zenon Help (on page 50): Allows online updating of zenon Help.
- ▸ Project Translation Interface: Tool for the translation of zenon language files. Opens or saves data for the zenon Language Translation Wizard. With this, projects can be imported into or exported out of zenon.

▶ Startup Tool (on page 61): Makes it possible to start the Editor and Runtime with certain parameters, to administer different zenon versions on one computer, to administer SQL instances and to define languages for Editor and Runtime.

▶ System Information Collector (on page 92): Reads system information and zenon information, displays it in an output window and saves it as a ZIP file.

The following are available for zenon Logic:

▶ zenon Logic Runtime Manager: Administer all stand-alone/manual-start zenon Logic Runtime projects on your computer.
The documentation for this tool is part of the zenon Logic documentation.

# 3. Diagnosis Viewer

All zenon modules such as Editor, Runtime, drivers, etc. as well as zenon Analyzer write messages to a joint log file. These can be read and configured with the `Diagnosis Viewer` program. The Diagnosis Viewer allows the reading of existing log files, online logging, saving of the current view, setting parameters for the Diagnosis Clients and the Diagnosis Server.

> **License information**
>
> *Part of the standard license of the Editor and Runtime.*

**STARTING THE DIAGNOSIS VIEWER**

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

▶ Windows 8: Enter "`Diagnosis Viewer`" on the desktop for `Apps`

▶ Windows 7: Start/All Programs/zenon/Version Independent Tools -> Diagnosis Viewer.

The Diagnosis Viewer is only available in English.

**USING IPV6**

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

**DRIVER ANALYSIS**

zenon driver log all errors in the log files. The default folder for the log files is subfolder `LOG` in directory `ProgramData`, example:

`C:\ProgramData\COPA-DATA\LOG`. Log files are text files with a special structure.

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

In the Diagnosis Viewer you can also:

  ▶ follow currently created entries live

  ▶ customize the logging settings

  ▶ change the folder in which the log files are saved

Note:

1. In Windows CE even errors are not logged per default due to performance reasons.

2. The Diagnosis Viewer displays all entries in UTC (coordinated world time) and not in local time.

3. The Diagnosis Viewer does not display all columns of a log file per default. To display more columns activate property `Add all columns with entry` in the context menu of the column header.

4. If you only use `Error logging`, the problem description is in column `Error text`. For other diagnosis level the description is in column `General text`.

5. For communication problems many drivers also log error numbers which the PLC assigns to them. They are displayed in `Error text` and/or `Error code` and/or `Driver error parameter(1 and 2)`. Hints on the meaning of error codes can be found in the driver documentation and the protocol/PLC description.

6. At the end of your test set back the diagnosis level from `Debug` or `Deep Debug`. At `Debug` and `Deep Debug` there are a great deal of data for logging which are saved to the hard drive and which can influence your system performance. They are still logged even after you close the `Diagnosis Viewer`.

## 3.1 General

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

  ▶ Diagnosis Server (on page 21): local or or defined in zenon6.ini defined `zenLogSrv`

  ▶ Diagnosis Clients (on page 25): all modules, drivers, services, etc. which write messages

  ▶ Diagnosis Viewer (on page 27): Analysis program

**VERSIONS**

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

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

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

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

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

**DEFAULT PORTS**

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

▶ up to 6.51: 1101 (port of service zenSysSrv)

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

⚠ **Attention**

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

**MEMORY OCCUPANCY**

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

## 3.2    Topology of the diagnosis system

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

## TOPOLOGY BEFORE ZENON 7.00 SP0

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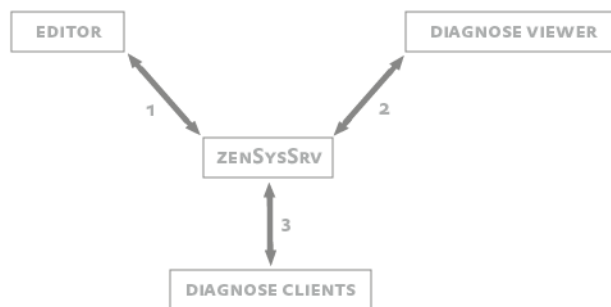


1. The Editor sends log entries, commands and data of the Remote Transport to `zenSysSrv`. `zenSysSrv` sends the configuration of the Diagnosis Clients (Editor, Runtime, driver, Web Server, Web Client, etc.) and the Remote Transport data to the Editor.

2. The Diagnosis Viewer sends diagnosis commands, diagnosis configurations and log entries to `zenSysSrv`. `zenSysSrv` sends diagnosis data and the Diagnosis Client configuration to the Diagnosis Viewer.

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

`zenSysSrv` reacts correspondingly to each incoming message:

▸ Log entries are written in log files.

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

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

**TOPOLOGY AS OF ZENON 7.00 SP0**

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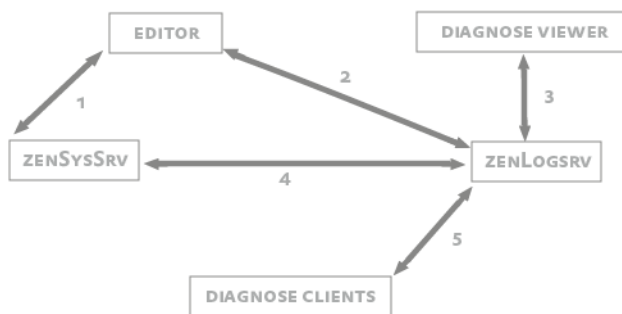


1.  The Editor sends commands and data of the Remote Transport to `zenSysSrv`. `zenSysSrv` sends data of the Remote Transport to the Editor.

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

3.  The Diagnosis Viewer sends diagnosis commands, diagnosis configurations and log entries to `zenSysSrv`. `zenSysSrv` sends diagnosis data and the Diagnosis Client configuration to the Diagnosis Viewer.

4.  The `zenSysSrv` sends log entries to the `zenLogSrv`. `zenLogSrv` sends the Diagnosis Client configuration to `zenSysSrv`.

5.  `zenLogSrv` sends the Diagnosis Client configuration to the Diagnosis Clients. The Diagnosis Clients send log entries to `zenLogSrv`.

`zenSysSrv` reacts to: incoming Remote Transport commands.
`zenLogSrv` reacts to incoming diagnosis commands and log entries


**EXAMPLE**

IN an environment with a central Diagnosis Server the Runtime is started on a device. Based on the Runtime version the configuration is read from `zenon6.ini`. Versions before 7.00 SP0 read entry **LOG_CONFIG** from `[SYS_REMOTE]`, later versions read this entry from `[LOGGING_SYSTEM]`. This configuration is used to establish a diagnosis connection. (For details see Standard procedure (on page 11).) Each additional component loaded by the Runtime (driver, `zenNetSrv`, etc.) also establish a diagnosis connection.

## 3.3 Standard procedure

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

The Diagnosis Server saves the received messages in TXT files with a special structure (on page 44). The default folder for the log files is subfolder `LOG` in folder `ProgramData`. For example:
`%ProgramData%\COPA-DATA \LOG`.
For more information see manual Installation and Updates chapter File structure.

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

In order to report not only error messages to the Diagnosis Server but also other information important for the diagnosis, the according settings have to be defined for the Client (on page 25).

You can also configure the behavior of the Server (on page 21).

### CONFIGURATION

The configuration of the connection is done in zenon6.inI (on page 12) divided in:

- ▶ Diagnosis Clients

- ▶ Diagnosis Server

- ▶ Versions to make sure that the configuration of the versions does not affect each other

The configuration of the Diagnosis Viewer (on page 27) also enables you to configure settings for the connection:

- ▶ Settings of the server (on page 22)

- ▶ Connection settings Diagnosis Server connection (on page 30)

- ▶ Diagnosis Client (on page 25)

- ▶ Diagnosis Viewer - Analysis Program    (on page 27)

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

### PROCEDURE

The Diagnosis Server is:

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

- ▶ an application under CE.
  Under CE only one process can use the port. Additionally started processes terminate themselves as the port cannot be opened. If the local configuration of the Diagnosis Server is set

under CE in such a way that only the user interface is displayed (INIT=2), several processes could emerge by the Diagnosis Clients trying to start the local Diagnosis Server.

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

1.  The Diagnosis Client reads and uses the configuration from `zenon6.ini`. If no configuration is available in `zenon6.ini`, the default configuration (**Diagnose Server**=`localhost:50780`) is used.

2.  The Diagnosis Client tries to establish a connection to the Diagnosis Server:

    Establishing successful:

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

    Establishing failed:

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

    c)  The Diagnosis Client tries to establish a connection to the local Diagnosis Server. If it succeeds, the diagnosis connection is established and the log entries are sent.

    If it fails, no log entries are created.

## 3.3.1     Entries in zenon6.ini

The configuration of zenSysSrv and zenLogSrv is carried out via zenon6.ini. At this it is differentiated between version 7.00 and up and versions 6.51 and earlier. With this you can configure old and new Diagnosis Clients and Diagnosis Servers independent of each other on one device. For example, the LOG entries of old Diagnosis Clients are diverted, without the LOG entries of new clients being affected.

## DIAGNOSIS SERVER BEFORE VERSION 7.00 SP0

| INI entry | Description |
|---|---|
| **[SYS_REMOTE]** | Section in zenon6.ini. Contains parameters for zenSysSrv (Remote Transport and Diagnosis Server). |
| **LOGDirectory=** | Defines folder for the LOG files. If there is no entry, the LOG folder in the %ProgramData% folder is used as a default value. Example: **LOGDirectory=** %ProgramData%\COPA-DATA\zenon651\LOG |
| **CONFIG=** | Configuration string for the Diagnosis Server and **zenSysSrv**. Remote Transport and the diagnosis system use the same server configuration up to and including version 6.51 SP0. The string consists of the following parts: **DEVICE=**[Device];HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout] <br><br> ▸ DEVICE: Sets the communication type used. TCP/IP and serial are available. <br> ▸ HOST: Is set to the computer name of the Diagnosis Server. <br> ▸ PORT: states the port to be used. <br> ▸ TIMEOUT: Provides the time-out time for the connection in seconds. <br> ▸ BAUD: Provides the connection speed of a serial connection. <br><br> PC configuration: <br> ▸ DEVICE=TCP/IP <br> ▸ HOST=localhost <br> ▸ PORT=1101 <br> ▸ TIMEOUT=10 <br><br> CE configuration: <br> ▸ DEVICE=COM1 <br> ▸ BAUD=115200 |
| **LOGMinFreeDiskSpace=** | Defines minimum memory (in MB) that must be available on the hard drive. LOG files are deleted before this value is gone below. Default: 1024 |
| **LOGMaxUsedDiskSpace=** | Defines the maximum memory on the hard drive in MB used for LOG files. LOG files are deleted if this value is exceeded. Default: 1024 |
| **LOGMinUsedDiskSpace=** | Defines memory on the hard drive (in MB) that is used even if there are no LOG files. Default: 5 |

| LOGLogLifeTime= | Defines the lifecycle of the LOG files in seconds. Older LOG files are deleted. Default: `1209600` (corresponds to 14 days) |
|---|---|
| LOGImageCnt= | Defines the number of LOG entries, after which all incremental LOG files are written.<br><br>▸ `0`: inactive (default) |
| LOGLogUpdateTime= | Number of milliseconds, after which the LOG entries received are written to a LOG file.<br><br>Default: `2000` |
| LOGMaxBufferedRecs= | Defines the number of LOG entries that are buffered if they cannot be written to files.<br><br>Default: `10240` |
| LOGMaxLogFileSize= | Maximal size of a log file in bytes. If a log file reaches this size, it is closed and a new log file is created.<br><br>Default: `5242880` (corresponds to 5 MB) |
| LOGCheckDiskTime= | Defines the interval in seconds, in which the memory occupied by LOG files is checked.<br><br>Default: `60` |
| INIT= | Action when starting the application with Windows CE:<br><br>▸ `0`: end immediately<br><br>▸ `1` (or other value greater than 2): Open listening port in minimize to system tray<br><br>▸ `2`: only display surface<br><br>Default: `1`<br><br>Note: As part of the separation of zenSysServ and zenLogServ for zenon 7.00, this default value was also changed for other versions. The default value was previously `2`. |

## DIAGNOSIS SERVER FROM VERSION 7.00 SP0

| INI entry | Description |
|---|---|
| `[LOGGING_SYSTEM]` | Section in zenon6.ini.<br><br>Contains parameters for the Diagnosis Server. Only affects `zenLogSrv` and has no effect on `zenSysSrv`. |
| LOGDirectory= | Defines the folder for the LOG files.<br><br>If there is no entry, the following is used as a standard value:<br><br>▸ The path extracted from the Registry,<br>  for example: %ProgramData%\COPA-DATA\LOG<br><br>▸ the LOG folder in the ProgramData folder of the zenLogSrv, if no path is |

| | defined in the registry,<br>e. g. `%ProgramData%\COPA-DATA\zenon700\LOG` |
|---|---|

| | |
|---|---|
| **CONFIG=** | Configuration string for the Diagnosis Server.    The string consists of the following parts:<br>**DEVICE**=`TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]`<br><br>▸ DEVICE: Sets the communication type used and must always be set to `TCP/IP`<br><br>▸ HOST: Is set to the computer name of the Diagnosis Server.<br><br>▸ PORT: states the port to be used.<br><br>▸ TIMEOUT: Provides the time-out time for the connection in seconds.<br><br>Configuration:<br><br>▸ DEVICE=TCP/IP<br><br>▸ HOST=localhost<br><br>▸ PORT=50780<br><br>▸ TIMEOUT=10 |
| **LOGMinFreeDiskSpace=** | Defines minimum memory (in MB) that must be available on the hard drive. LOG files are deleted before this value is gone below.<br><br>Default: `1024` |
| **LOGMaxUsedDiskSpace=** | Defines the maximum memory on the hard drive in MB used for LOG files. LOG files are deleted if this value is exceeded.<br><br>Default: `1024` |
| **LOGMinUsedDiskSpace=** | Defines memory on the hard drive (in MB) that is used even if there are no LOG files.<br><br>Default: `5` |
| **LOGLogLifeTime=** | Defines the lifecycle of the LOG files in seconds. Older LOG files are deleted.<br><br>Default: `1209600` (corresponds to 14 days) |
| **LOGImageCnt=** | Defines the number of LOG entries, after which all incremental LOG files are written.<br><br>Default: `0` |
| **LOGLogUpdateTime=** | Number of milliseconds, after which the LOG entries received are written to a LOG file.<br><br>Default: `2000` |
| **LOGMaxBufferedRecs=** | Defines the number of LOG entries that are buffered if they cannot be written to files.<br><br>Default: `10240` |
| **LOGMaxLogFileSize=** | Maximal size of a log file in bytes. If a log file reaches this size, it is closed and a new log file is created.<br><br>Default: `5242880` (corresponds to 5 MB) |

| | |
|---|---|
| **LOGCheckDiskTime=** | Defines the interval in seconds, in which the memory occupied by LOG files is checked. <br><br> Default: `60` |
| **INIT=** | Action when starting the application with Windows CE: <br><br> ▸ `0`: end immediately <br><br> ▸ `1` (or other value greater than 2): Open listening port in minimize to system tray <br><br> ▸ `2`: only display surface <br><br> Default: `1` |

## DIAGNOSIS CLIENT BEFORE VERSION 7.00 SP0:

| INI entry | Description |
|---|---|
| `[SYS_REMOTE]` | Section in zenon6.ini. <br><br> Contains parameters for the Diagnosis Client. |
| **LOG_CONFIG=** | A configuration string for the Diagnosis Client is stored here. The string consists of the following parts: <br> **DEVICE**=`TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]` <br><br> ▸ DEVICE: Sets the communication type used and must always be set to `TCP/IP` <br><br> ▸ HOST: Is set to the computer name of the Diagnosis Server. <br><br> ▸ PORT: states the port to be used. <br><br> ▸ TIMEOUT: Provides the time-out time for the connection in seconds. <br><br> Configuration: <br><br> ▸ DEVICE=TCP/IP <br><br> ▸ HOST=localhost <br><br> ▸ PORT=1101 <br><br> ▸ TIMEOUT=10 |

## DIAGNOSIS CLIENT FROM VERSION 7.00 SP0

| INI entry | Description |
|---|---|
| `[LOGGING_SYSTEM]` | Section in zenon6.ini. <br><br> Contains parameters for the Diagnosis Client. |
| **LOG_CONFIG=** | A configuration string for the Diagnosis Client is stored here. The string consists of the following parts: |

| | |
|---|---|
| | **DEVICE**=TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]<br><br>▸ DEVICE: Sets the communication type used and must always be set to TCP/IP<br><br>▸ HOST: Is set to the computer name of the Diagnosis Server.<br><br>▸ PORT: states the port to be used.<br><br>▸ TIMEOUT: Provides the time-out time for the connection in seconds.<br><br>Configuration:<br><br>▸ DEVICE=TCP/IP<br><br>▸ HOST=localhost<br><br>▸ PORT=50780<br><br>▸ TIMEOUT=10 |

**NOTE:**

**INIT UNDER CE**

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

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

**ZENLOGSRV ON A SYSTEM WITH DIFFERENT VERSIONS**

If **zenLogSrv** is used on a system with different versions as a central local diagnosis server, the entry **LOG_CONFIG** in the **[SYS_REMOTE]** such must be as follows:
**DEVICE**=TCP/IP;HOST=localhost;PORT=5780;TIMEOUT=10

Reason: Older clients then use **zenLogSrv** as the Diagnosis Server. New clients do this automatically. This service is switched on automatically on the PC when the system is started; it must be started manually with CE.

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

## 3.3.2    Windows CE

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

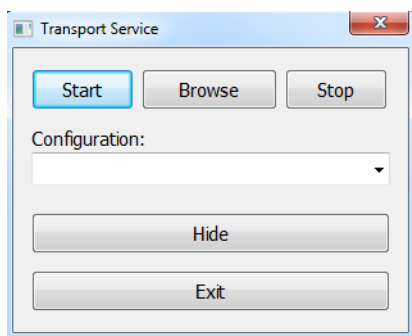At the configuration (on page 12) of the connection consider the recommendation for parameter **INIT**:

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

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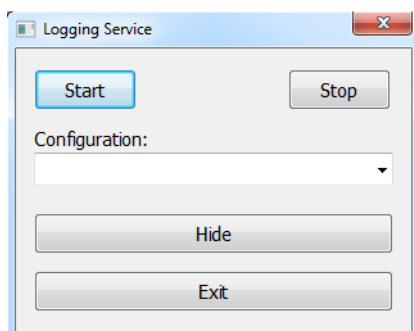
**USER INTERFACE UNDER CE**

**TRANSPORT SERVICE (ZENSYSSRV)**

| Parameters | Description |
|---|---|
| **Start** | Opens the Listening port and enables `zenSysSrv` to receive Remote Transport commands. |
| **Browse** | Opens the dialog for browsing the file system. |
| **Stop** | Terminates the receiving of Remote Transport commands and closes the Listening port. |
| **Configuration** | Selection of an existing server configuration from drop-down list. New connections cannot be configured. See section Entries in zenon6.ini (on page 12) for the configuration of the connection. Available are:<br><br>▸  Configuration from zenon6.ini<br><br>▸  Standard configuration for TCP/IP<br><br>▸  Standard configuration for COM1 to COM4 |
| **Hide** | Minimizes the user interface into the task bar. |
| **Exit** | Terminates the application and closes the Listening port if necessary. |
| **X**<br>(button top right) | Minimizes the user interface into the task bar. |

## LOGGING SERVICE (ZENLOGSRV)

| Parameters | Description |
|---|---|
| **Start** | Opens the Listening port and enables **zenLogSrv** to receive log entries. |
| **Stop** | Terminates the receiving of log entries and closes the Listening port. |
| **Configuration** | Selection of an existing configuration from drop-down list. New connections cannot be configured. See section Entries in zenon6.ini (on page 12) for the configuration of the connection. Available are:<br><br>▸ Configuration from zenon6.ini<br><br>▸ Standard configuration for TCP/IP |
| **Hide** | Minimizes the user interface into the task bar. |
| **Exit** | Terminates the application and closes the Listening port if necessary. |
| **X**<br>(button top right) | Minimizes the user interface into the task bar. |

## 3.4    Diagnosis Server

The Diagnosis Server:

▸ Creates and manages log files.

▸ The Server is:

  • implemented from zenon 7.00 on as zenLogSrv

  • up until zenon 6.51 integrated in the zenSysSrv.

▸ The configuration of the server is read from the zenon6.ini (on page 12).

▸ The server writes the received log data into the log file.

▸ The saving location for the files has to be configured. Standard: `%ProgramData%\COPA-DATA\LOG\`

▸ Log files are named after the following fashion `LOG<YYMMTThhmmss>.txt`.

▸ The server is multi client able. Several evaluations can connect to the server simultaneously.

▸ It is possible to connect to the server online, to see the current logging messages.

▸ It is possible to connect to diagnosis servers other than the local and to execute the same tasks (configuring server, configuring clients, online logging) as on the local server.

▶ The parameters of the current server (with which the Diagnosis Viewer is connected) can be modified. If a modification of another diagnosis server is needed, the server connection can be changed in the menu under File – Connect to….

▶ The menu entry `Settings – Server configuration` is only available, if online logging is not used at the moment.

### 3.4.1 System integrity monitoring

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

The following parameters are monitored.

| Parameters | Limit |
|---|---|
| `Warning threshold for used handles` | > 5000 |
| `Error threshold for used handles` | > 9000 |
| `Warning threshold for used GDI objects` | > 5000 |
| `Error threshold for used GDI objects` | > 9000 |
| `Warning threshold for CPU use for the main thread` | > 70 % |
| `Error threshold for CPU use for the main thread` | > 90 % |
| `Warning threshold for total CPU use` | > 70 % |
| `Warning threshold for total CPU use` | > 90 % |
| `Warning threshold for free main memory` | < 30 % |
| `Error threshold for free main memory` | < 10 % |
| `Warning threshold for OnTimer in the main frame` | > 1000 ms |
| `Error threshold for OnTimer in the main frame` | > 5000 ms |

### 3.4.2 Settings of the server

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

## CONFIGURATION VIA ZENON6.INI

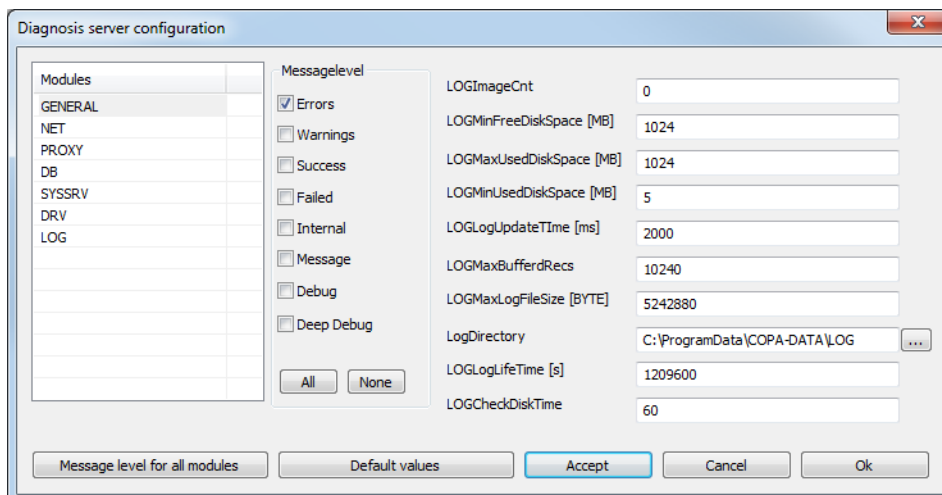See section Entries in zenon6.ini (on page 12).

## CONFIGURATION VIA DIALOG

To configure the Diagnosis Server via the dialog:

1. start the Diagnosis Viewer

2. open entry File Connect to... (on page 30).

3. configure the desired Server
   (Take care of the correct port selection depending on the version!)

4. open entry Settings -> Server configuration

5. configure the events which should be logged

6. Close the dialog by clicking on OK.

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

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

| Parameters | Description |
|---|---|
| `Modules` | Selection of the modules which you want to configure. |
| `Messagelevel` | Selection of the events which should be logged.<br>Default: **Errors** |
| **LOGImageCnt** | Number of records, after which all incremental fields will be written.<br>Default: `0` (not active) |
| **LOGMinFreeDiskSpace** | It is continuously checked, if less than the configured minimal free disk space is available. The oldest log files are deleted. Minimal free disk space in MB, before log files are deleted.<br>Default: `1024 MB` |
| **LOGMaxUsedDiskSpace** | Maximal used disk space for the log in MB.<br>Default: `1024 MB` |
| **LOGMinUsedDiskSpace** | Minimal used disk space in MB independent whether LOGMinFreeDiskSpace is under-run.<br>Default: `5 MB` |
| **LOGLogUpdateTime** | Time in ms, after which the received entries are saved.<br>Default: `2000 ms` |
| **LOGMaxBufferedRecs** | The server buffers the contents of all incremental log fields for diverse applications, in order to be able to write images of them into the log file. With the start of a log file and after configurable number of log entries a complete image for all addresses is written into the log file.<br>Received data are written to the log files. The entry is done via temporary buffer. It can be configured whether the data should be written immediately or delayed.<br>Number of buffered entries if they cannot be saved.<br>Default: `10240` |
| **LOGMaxLogFileSize** | The server writes the received log data into the log file. If this log file reaches the configured size, a new file is started.<br>Maximal size of a single log file in bytes.<br>Default: `5 MB` |
| **LOGDirectory** | Folder in which the log files are written.<br>Default: `%ProgramData%\COPA-DATA\LOG\` |
| **LOGLogLifeTime** | It is continuously cheked, if the lifetime of the log files is exceeded.<br>The oldest log files are deleted.<br>Number of seconds to keep the log files.<br>Default: `14 days` |
| **LOGCheckDiskTime** | Time in sec, in which the used disk space id checked.<br>Default: `60 s` |
| `Message level for all modules` | Settings are taken over for all modules. |
| `Default values` | Restore default settings. |
| `Accept` | Take over settings for this module. |

| Cancel | Discards changes and closes dialog. |
|--------|-------------------------------------|
| OK | Applies changes and closes dialog. |

## 3.5 Diagnosis Client

All programs which create log entries are Diagnosis Clients. These log entries are sent to the Diagnosis Server via TCP/IP. Server computer and port are read - dependent on the used version - from the local `zenon6.ini` (on page 12) and contacted. If the connection fails the following procedure is carried out cyclically:

▸   If the Diagnosis Server cannot be reached, a attempt to reconnect is made every 500 ms.

▸   If no connection could be established after half the timeout time, the system tries to start the service zenSysSrv or zenLogSrv.

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

**CONFIGURATION DIAGNOSIS CLIENT**

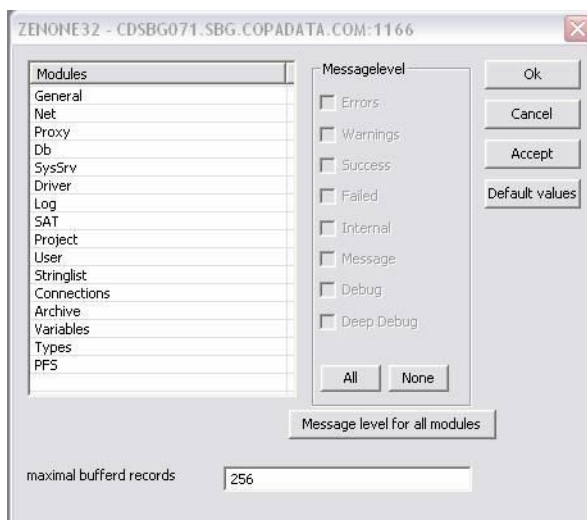To configure the Diagnosis Client via the dialog:

1. start the Diagnosis Viewer

2. open entry Settings -> Client configuration
(only available if logging is inactive)

3. highlight a Client

4. click on **List of parameters**

5. The dialog for configuration is opened

6. configure the Client

7. Close the dialog by clicking on **OK**.

8. repeat the procedure for other Clients if necessary

## CLIENT LIST
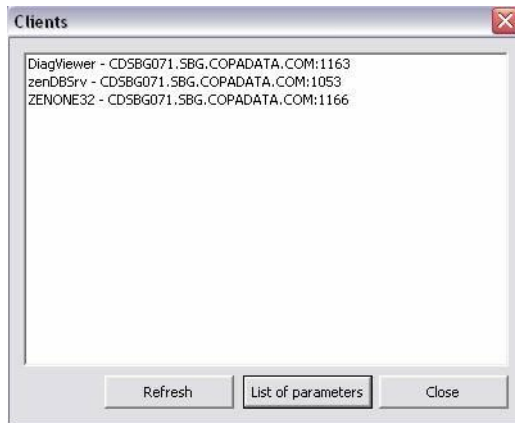


| Parameters | Description |
|---|---|
| **Clients** | Lists all available Clients. |
| **Refresh** | Updates the list of the Clients. |
| **List of parameters** | Opens the dialog for configuring the selected Client. |
| **Close** | Closes the dialog. |

## CONFIGURE CLIENT



The available standard modules:

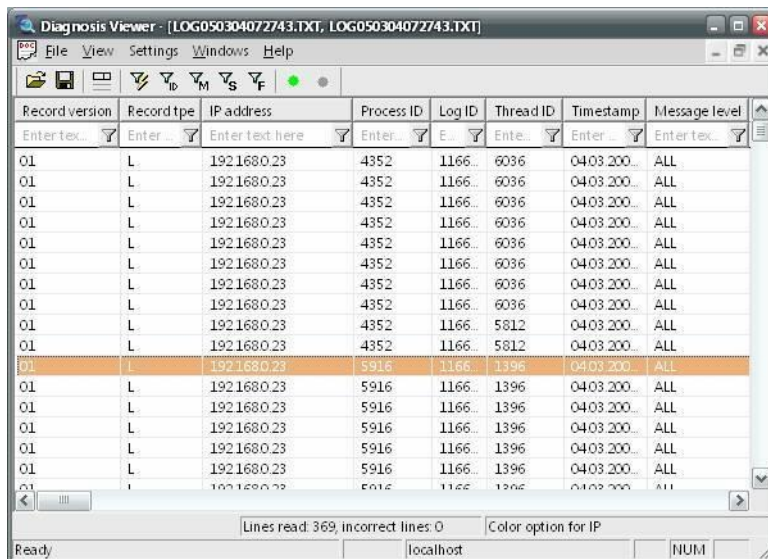| Parameters | Description |
|---|---|
| **Modules** | Selection of the modules which you want to configure. |
| | The list is made up of standard modules and modules dependent on the respective client. |
| | ▸ `General`: General messages |
| | ▸ `Net`: Network messages |
| | ▸ `Proxy`: Messages of the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

## 3.6     Diagnosis Viewer - Analysis Program

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

To display a log file:

1. select File -> Open

2. the dialog for selecting a log file is opened with focus on the configured default folder

3. select the desired file
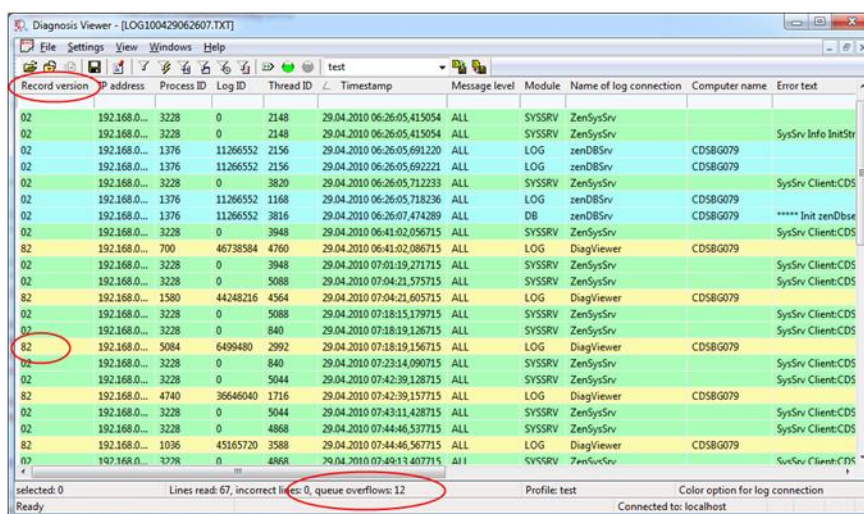
4. the log file is displayed



5. Double click an entry to open the detail view

## RECOGNIZING QUEUE OVERFLOW AT DRIVER

If messages of a driver are deleted because of queue overflow, the Diagnosis Client and the Diagnosis Server set a marker in the new entry when writing a new entry for all activated modules (on page 37) that older entries were deleted from the queue. The overflow recognitions contained in the opened log files are counted:

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

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

## 3.6.1    Global settings

The entries are in the English language.

| Parameters | Description |
|---|---|
| `File` | Commands in menu File. |
| `Open` | Opens dialog for selecting a log file saved in TXT format. Each newly opened log file is displayed in its own window. |
| `Open to active document` | Each new log file is added to the active window. |
| `Close` | Closes the active window. |
| `Save` | Saves the log files of the active window. |
| `Save as` | Saves the current view of the active window (e.g. filter settings) to a file to be selected. |
| `Remote Download` | Only available, if a connection to a Remote Diagnosis Server exists. Enables the download of logging files of the Remote Server to the local log folder. A subdirectory with the name of the PC is created. Only file, which have changed or which are new, are available. |
| `Connect to` | Opens the dialog for the Connection selection (on page 22). |
| `Online` | Activates the online error view.<br>If online logging is started, all incoming entries are displayed. The same filter dialog as for reading files can also be set here.<br><br>Difference: If no log connection is selected, all incoming log entries will be displayed, otherwise only the ones from the selected clients.<br><br>If the filter of the log connection is modified, all entries not fulfilling the filter criteria will be lost. (Logging file nevertheless is created and all entries are saved.) Displayed entries can be saved. |
| `Offline` | Deactivates the online error view. (Default) |
| `Exit` | Closes the Diagnosis Viewer. |

**Connection settings Diagnosis Server connection**

The Diagnosis Viewer automatically connects to a selected standard Server at the start. If no standard server is defined, `localhost` is used as standard server. The Server configuration can also be done via zenon6.ini (on page 12) (recommended).

## SELECT DIAGNOSIS SERVER
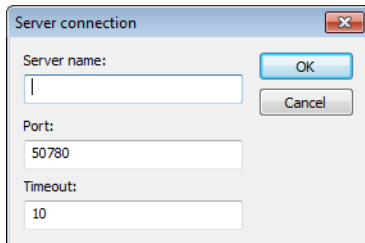
Click on File -> Connect to... to open the dialog for selecting a Server:
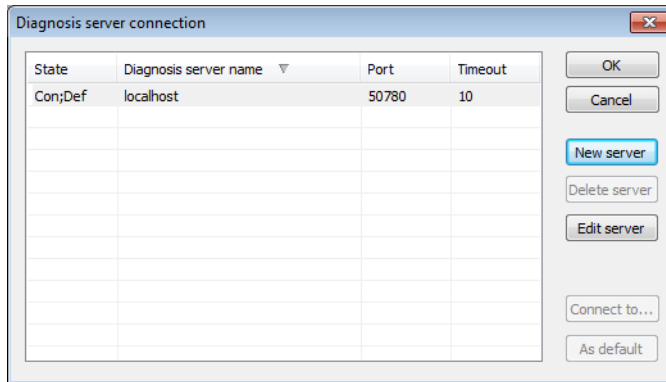
| Parameters | Description |
|---|---|
| List Server | Lists all configured Servers and displays them:<br>▸ Status<br>▸ Name<br>▸ Port<br>▸ Timeout |
| **OK** | Applies settings and closes the dialog. |
| **Cancel** | Discards settings and closes the dialog. |
| **New Server** | Opens the dialog for configuring a new Server. |
| **Delete Server** | Selected Server entry is deleted from the list. |
| **Edit Server** | Opens the dialog for configuring the selected Server. |
| **Connect to** | Establishes a connection to the selected Server. |
| **As default** | Selected server becomes the standard server. |

## CREATE AND EDIT DIAGNOSIS SERVER

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

| Parameters | Description |
|---|---|
| **Server name** | Name of the PC to which to connect. |
| | The following must run on the PC: |
| | up to version 6.51: **zenSysSrv** |
| | from version 7.00: **zenLogSrv** |
| **Port** | Port of the service on the target computer: |
| | up to version 6.51: `1101` |
| | from version 7.00 on: `50780` |
| **Timeout** | Time in seconds to wait for a response from the **Sysservice**. |
| | Default: `10 s` |
| **OK** | Applies settings and closes the dialog. |
| **Cancel** | Discards settings and closes the dialog. |

## Column settings

A number of pre-defined columns can be selected in the menu under Settings -> Column settings. These columns and their entries are automatically displayed on opening a new file. Also the sorting and the column width of the selection are regarded. On opening the column width has to be set to `Autosize`.
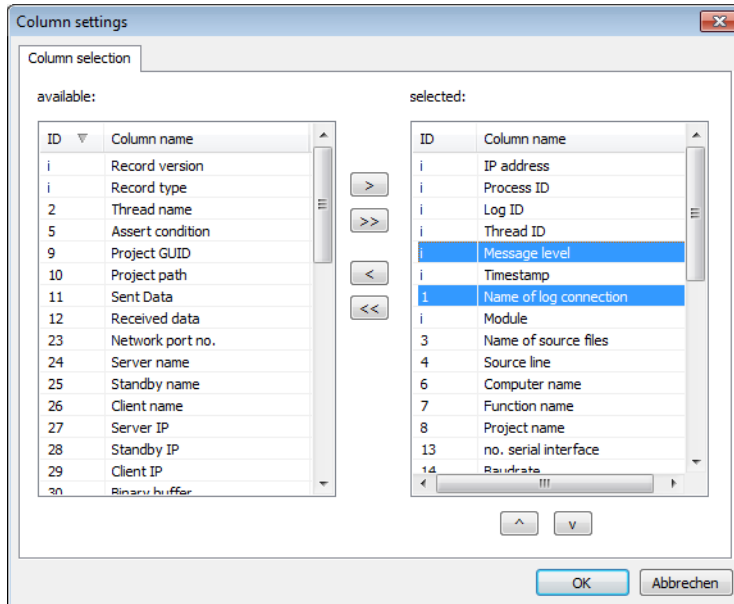


| Parameters | Description |
|---|---|
| `available` | available columns |
| `selected` | Columns which are displayed |
| `>` | adds columns selected at "available" to "selected" |
| `>>` | adds all available columns at "available" to "selected" |
| `<` | removes selected columns from "selected" |
|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

Columns can also be configured via the context menu:

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

## 3.7     Possibilities of Filtering

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

**SYMBOL BAR FILTER**

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

| Symbol | Tool tip | Description |
|---|---|---|
| 1 | `Change pre-filter settings` | Opens dialog with five tabs for defining filters. |
| 2 | `Change pre-filter for IP-ProcessID-LogID` | Opens tab `IP address - Process No - Log ID (on page 36).` |
| 3 | `Change pre-filter for modules` | Opens tab `Modules` (on page 37). |
| 4 | `Change pre-filter for additional columns` | Opens tab `Additional columns` (on page 38). |
| 5 | `Change pre-filter for time interval` | Opens tab `Time interval` (on page 39). |
| 6 | `Change pre-filter for coloring` | Opens tab Colors (on page 40). |

## FILTER DIALOG
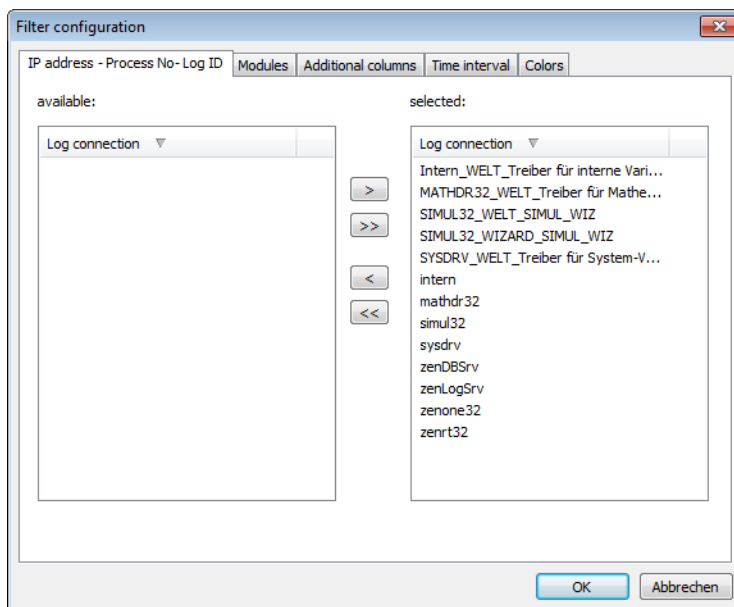
| Tabs | Description |
|---|---|
| `IP-ProcessID-LogID` | Opens tab `IP address - Process No - Log ID` (on page 36) for configuring the connection which should be logged. |
| `Modules` | Opens tab `Modules` (on page 37) for the modules which should be logged. |
| `Additional columns` | Opens tab `Additional columns` (on page 38) for selecting additional columns which should be displayed. |
| `Time interval` | Opens tab `Time interval` (on page 39) for defining time filter. |
| `Colors` | Opens tab Colors (on page 40) for selecting the color-coding of information. |

## 3.7.1    IP address - Process No - Log ID

Configuration of the connections and processes which should be displayed.
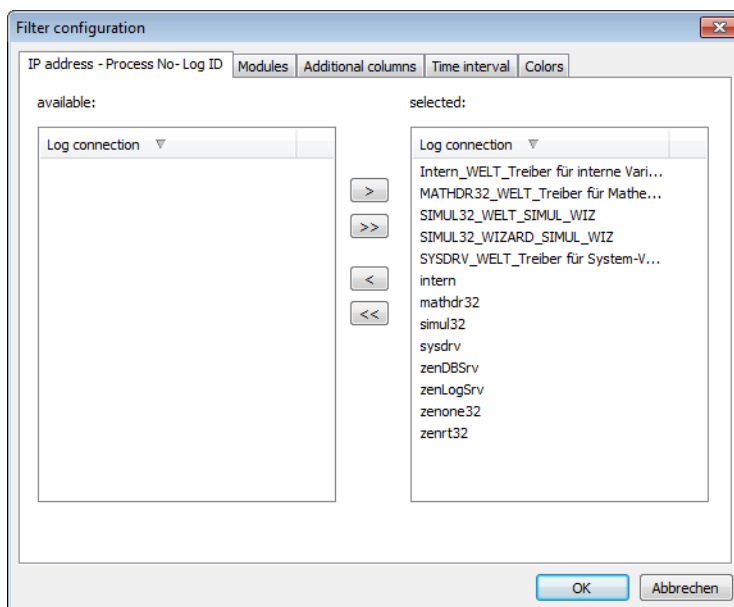
| Parameters | Description |
|---|---|
| `available` | List of available connections. |
| `selected` | List of selected connections. |
| `Pfeiltasten` | Add selected (>) or all (>>) connections to list `selected` or removes them from the list (< or <<). |
| `OK` | Applies all changes on all tabs and closes the dialog. |
| `Abbrechen` | Discards all changes on all tabs and closes the dialog. |

## 3.7.2    Modules

Selection of the modules which should be displayed.
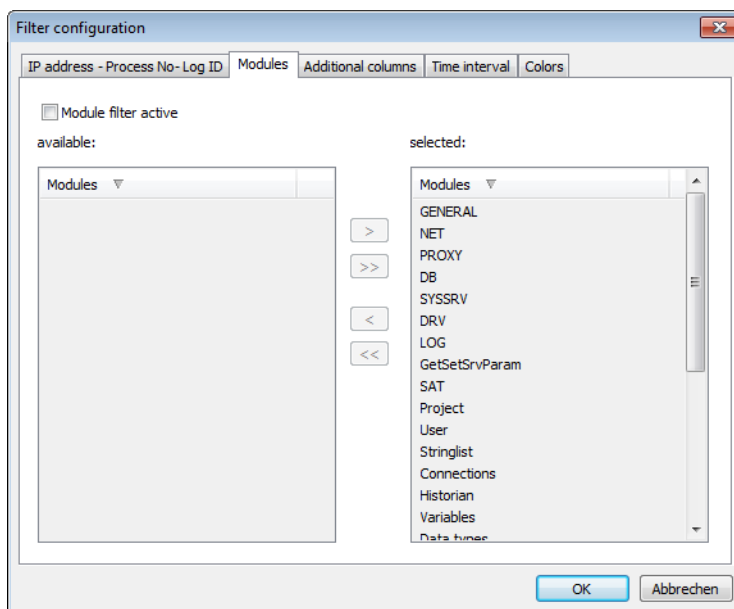
| Parameters | Description |
|---|---|
| **Module filter active** | `Active:` It is filtered on modules. <br><br> With this only log data records are displayed which are assigned to a selected module. |
| **available** | Available modules. |
| **selected** | Selected modules. |
| **Cursor keys** | Add selected (**>**) or all (**>>**) connections to list **selected** or removes them from the list (**<** or **<<**). |
| **OK** | Applies all changes on all tabs and closes the dialog. |
| **Cancel** | Discards all changes on all tabs and closes the dialog. |

## 3.7.3    Additional columns

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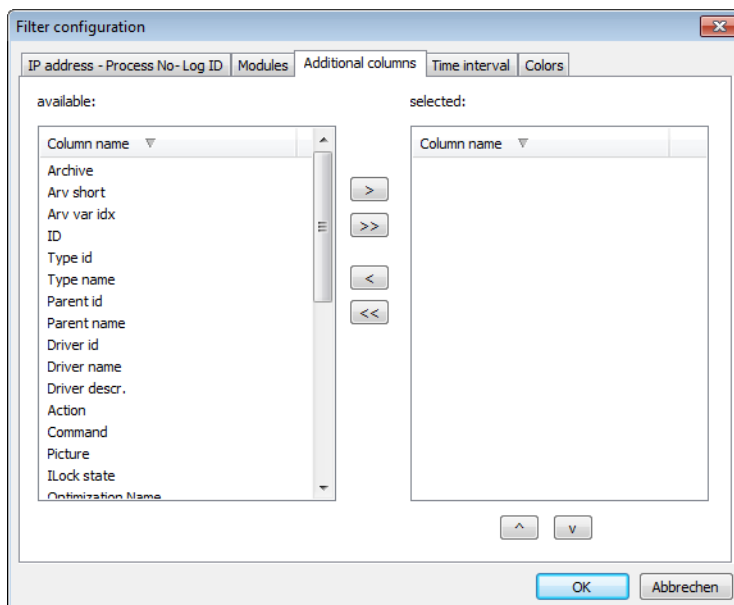
| Parameters | Description |
|---|---|
| `available` | List of the available columns. All field definitions existing in the file are displayed. |
| `selected` | List of the selected columns. |
| `Cursor keys` | Add selected (>) or all (>>) connections to list **selected** or removes them from the list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

## 3.7.4    Time interval

Configuration of the time filter for displaying the entries.

| Parameters | Description |
|---|---|
| `Start time:` | Selection of the date and point in time from which entries should be displayed.<br><br>Default: actual date |
| `End time:` | Selection of the date and point in time up to which entries should be displayed.<br><br>Default: actual date |
| `Reset time interval` | Sets filter back to default value. |
| `OK` | Applies all changes on all tabs and closes the dialog. |
| `Cancel` | Discards all changes on all tabs and closes the dialog. |

## 3.7.5    Colors

Selection of the color-coding of the information.
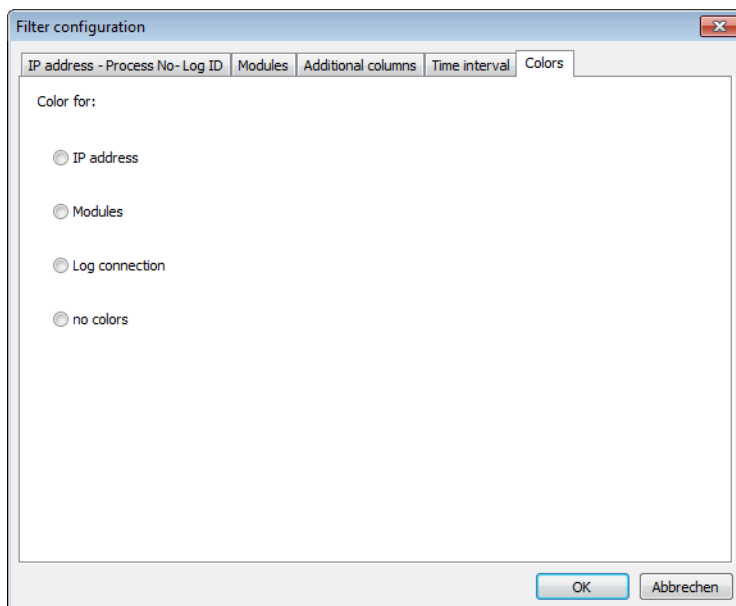
| Parameters | Description |
|---|---|
| `Colors for:` | Selection of the color |
| `IP address` | `Active`: Different IP addresses are colored differently. |
| `Modules` | `Active`: Different modules are colored differently. |
| `Log connection` | `Active`: Different names of the log connection are colored differently. |
| `no colors` | `Active`: Entries are not colored. |
| `OK` | Applies all changes on all tabs and closes the dialog. |
| `Cancel` | Discards all changes on all tabs and closes the dialog. |

## 3.8 Reading the log files
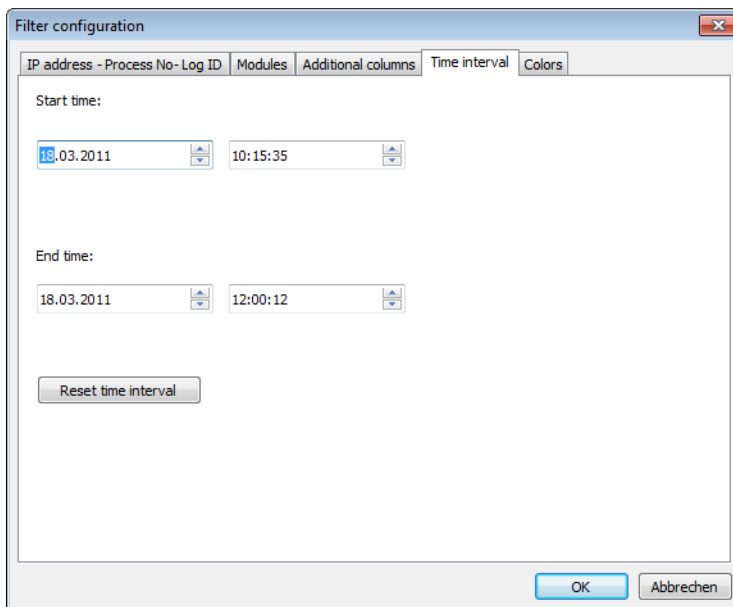
One or more log files can be opened in an analysis at the same time. A pre-filter (on page 34) has to be set to limit the display. This is possible with five property pages. This filter can be modifies later on. If the filter is set, only the entries fulfilling these filter criteria are displayed. The entries are listed chronologically.

**FILTER COLUMNS**

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

**STANDARD FIELDS IN THE LOG FILE:**

| ID | Parameters | Description |
|---|---|---|
| i | IP address | IP address. <br><br> These fields identify the clients and allow the message to be assigned. |
| i | Log ID | entry ID <br><br> These fields identify the clients and allow the message to be assigned. |
| i | Message Level | Name of the message level for which the message was entered. |
| i | Module | Name of the module, which entered the message. |
| i | Process ID | ID of the project. <br><br> These fields identify the clients and allow the message to be assigned. |
| i | Record type | Type of entry. |
| i | Record version | Version number of the entry. |
| i | Thread ID | ID of the thread, from which the message was entered. |
| i | Timestamp | Time of the message in UTC. |

**OPTIONAL FIELDS WITH FIX ID.**

| ID | Constant | Description |
|---|---|---|
| 1 | Name of log connection | Name of logging connection |
| 2 | Thread name | Name of the threads. |
| 3 | Name of source files | Name of the source file. |
| 4 | Source line | Source line |
| 5 | Assert condition | Assert condition |
| 6 | Computer name | Computer name |
| 7 | Function name | Function name |
| 8 | Project name | Project name |
| 9 | Project GUID | GUID of the project. |
| 10 | Project path | Project path |
| 11 | Sent Data | Sent data |
| 12 | Received data | Received data |

| 13 | no. serial interface | Number of the serial interface. |
|----|----------------------|--------------------------------|
| 14 | Baudrate | Baud rate |
| 15 | dtr setting | DTR setting. |
| 16 | rts setting | RTS setting. |
| 17 | Serial char. length | Serial character length |
| 18 | Parity | Parity |
| 19 | No. stopbits | Number of stop bits |
| 20 | CTS | CTS. |
| 21 | dsr | DSR |
| 22 | dsr sensitivity | DSR sensitivity. |
| 23 | Network port no. | Port number in the network. |
| 24 | Server name | Server name. |
| 25 | Standby name | Name of standby server |
| 26 | Client name | Client name. |
| 27 | Server IP | IP address server. |
| 28 | Standby IP | IP address standby. |
| 29 | Client IP | IP address client. |
| 30 | Binary buffer | Binary buffer. |
| 31 | Pointer | Pointer |
| 32 | Class name | Class name |
| 33 | Error code | Error code: |
| 34 | DLL instance handle | DLL instance handle |
| 35 | DLL name | DLL name |
| 36 | Driver error parameter 1 | Driver error parameter 1 |
| 37 | Driver error parameter 2 | Driver error parameter 2 |
| 38 | Trace Message | Trace message |
| 39 | Errortext | Error text |
| 40 | Error file name | Name of error file. |
| 41 | Success condition | Condition for success |
| 42 | Value if successful | Value when successful |
| 43 | Net adress | Net address: |

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

## 3.9 Structure of the log file

Log files are ANSI text files. The single fields are separated by tabs. The final character is CR+LF. So, the Notepad can be opened to display the files.

Log files contain information sequentially, not chronologically sorted.

### 3.9.1    Message levels

Eight groups exist for the subdivision of log messages. They are bit coded and therefore can be combined.

| 1 | Error messages |
|-----|------------------|
| 2 | Warnings |
| 4 | Success message |
| 8 | TRACE |
| 16 | ASSERT |
| 32 | Log messages |
| 64 | Debug |
| 128 | Extended debug |

### 3.9.2    Search function

With `View/Find` the current window can be searched. All hits are marked.

### 3.9.3    Profiles

Column settings can be saved as profiles.

To save profiles:

1. enter a name into the filed in the tool bar
2. click on the disk symbol on the right-hand side

To load profiles:

1. select a saved profile from the combo box
2. click on the second symbol on the right-hand side with the disk

The profiles are saved a *.lvs files.

## 3.10 Handling of errors and messages for the Diagnosis Viewer

**ERROR**

| Error | Possible causes |
|---|---|
| The port cannot be opened. | ▸ Another application uses the port. Check via "netstat".<br><br>▸ The ports for entries **[SYS_REMOTE] CONFIG** and **[LOGGING_SYSTEM] CONFIG** are identical. **zenLogSrv** and **zenSysSrv** then try to open the same port. |
| Diagnosis Clients do not start the zenLogSrv | ▸ **zenAdminSrv** was terminated. Without it the service cannot be started.<br><br>▸ **zenLogSrv** is not registered as a service at the PC. In this case enter the following in the command line: **zenLogSrv.exe –Service**<br><br>▸ Diagnosis Clients are not of version 7.00 SP0 or higher. The **zenLogSrv** is only supported from this version on.<br><br>▸ Under Windows CE: The individual components (Runtime, SysSrvCE, LogSrvCE) are located in different folders. They must be located in the same folder. Otherwise the components do not find one another. |
| Under CE many processes are created by SysSrvCE.exe or LogSrvCE.exe. | ▸ One of the two entries in zenon6.ini **[SYS_REMOTE] INIT** or **[LOGGING_SYSTEM] INIT** has the value 2. As a result the application only displays the user interface and does not open the Listening port. Each Diagnosis Client then tries to start the process as it cannot connect to the Diagnosis Server. |
| Several processes crash.<br><br>(Unhandled Exceptions of the Diagnosis Server at receiving log messages or configuration commands or of the Diagnosis Client and Diagnosis Viewer during booting or during receiving the configuration) | ▸ The versions do not match. Diagnosis Clients, Diagnosis Server and Diagnosis Viewer must either all have version 7.00 SP0 or higher or all version 6.51 SP0 or earlier (see Compatibility (on page 7)). |

**LOG ENTRIES**

| Entry | Description |
|---|---|

| | |
|---|---|
| `SysSrv received not supported network message!` | **zenSysSrv** received a network telegram which is not supported. Example: Log entries. |
| `LogSrv received not supported network message!` | **zenLogSrv** received a network telegram which is not supported. Example: Remote Transport commands |
| `Could not open listening port. Server will be stopped.` | The **zenLogSrv** or the **zenSysSrv** could not open its Listening port. The error message is logged as follows:<br><br>▸ zenLogSrv and zenSysSrv at PC:<br> Entry in the Windows event display.<br><br>▸ zenSysSrv under CE:<br> Message box for the user and log entry to the Diagnosis Server.<br><br>▸ zenLogSrv under CE:<br> Message box for the user. |

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

▸ SysSrv: zenSysSrv

▸ SysCli: Client to the zenSysSrv

▸ LogSrv: zenLogSrv

▸ LogCli: Diagnosis Client

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

# 4. Keyblock Runtime Start

`Keyblock Runtime Start` is a program with which zenon Runtime runs as a `shell`. In doing so, zenon Runtime is started, but all Windows system tasks are blocked. Shortcuts such as `Windows` key or `Ctrl+Alt+Del` no longer have an effect. User can no longer access the operating system but only work on the zenon user interface.

The precondition for this is that the project properties are set **Runtime title** to `No title (full screen)`. Then zenon runs in full screen mode and the Runtime cannot be minimized.

Note also the information provided in the `Protect Runtime files` (on page 49) chapter.

**License information**

*Part of the standard license of the Editor and Runtime.*

## 4.1 Usage

To use `Keyblock Runtime Start`:

1. in the Windows start folder under COPA-DATA open the zenon tools

2. Select `Keyblock Runtime Start`

3. the program starts and automatically starts the Runtime

4. The program blocks all   access to the operating system.

   - locked shortcuts:

     ```
     Ctrl+Alt+Del
     Ctrl+Esc
     Alt+Tab
     Alt+Esc
     Alt+F4
     Windows key
     ```
     When locking the system keys, the normal operation of the scroll bars with the mouse in the Runtime is also blocked. You can work around the blocking with the help of the context menu.

   - Hiding the Control Panel in the start menu

   - Locking the tool bar for operation

   - Prevents

Changing passwords

Closing Windows

Logout

Locking the computer

User change

- Hiding all element in the task manager

> 💡 **Information**
>
> If **`Keyblock Runtime Start`** is started using the startup process of the operating system:
>
> ▶ take care that the auto start folder is user-specific: If an other user is logged in, the program is not executed.
>
> ▶ Processing the startup process programs can be prevented by pressing the `Shift` key when the operating system is booting.

This locking cannot be bypassed during Runtime. When the Runtime is closed normally, the system restrictions are canceled. If the Runtime should be operable without these limitations, the Runtime must be started instead of **`Keyblock Runtime Start`**.

> ⚠ **Attention**
>
> *Take care that you engineer a possibility to close the Runtime in your project. There is no possibility to end the Runtime regularly.*
>
> ▶ if it can only be ended by turning off the computer
>
> ▶ all system keys are still locked after a restart
>
> *To make systems keys available after an irregular ending (e.g. black out):*
>
> ▶ start the Runtime again with the help of **`Keyblock Runtime Start`**
>
> ▶ end the Runtime regularly via a close button

## 4.2 Protect Runtime files

The access to the Runtime files can be strongly restricted and therefore well protected. At this only a single Windows user has read and write rights for the Runtime folder. All other Windows user do not have any rights in the Runtime folder including read rights. Operators in the Runtime log on as zenon user.

In order to limit access to the file system:

1. Only create a single Windows user (for instance: `zenon_ADMIN)` who is authorized to start zenon as well as to read and write in the zenon Runtime folder.

2. Disable access to the zenon Runtime folder for all other Windows users – including read authorizations!

3. Disable any remote access to the user `zenon_ADMIN`.

4. Block any software for remote maintenance or remote access such as zenon Remote Desktop.

5. Make sure that zenon can only be started if this user (`zenon_ADMIN)` is logged in.
Since other Windows users do not have read authorization Runtime will only start in the context of this user (`zenon_ADMIN)`.

6. Make sure that zenon runs as shell:

   a) For this purpose, create a zenon autostart with `Keyblock Runtime Start` (on page 48)

   b) activate the property **Lock system keys** in the group **Runtime settings** of project properties

   c) start zenon in full-screen mode: Set property **Runtime title** to `No title`

   d) also bear multi-screen systems in mind in the configuration

   e) disable Explorer start

   f) do not offer file selection dialogues
   (in this case no functions may be projected which require the user to select files in Runtime)

The access to the zenon file system is then protected.

# 5. Online updating of the zenon Help:

The `Documentation Download Tool` administers the updating of your online help including embedded help, dialog help, tooltips and the PDF product documentation from zenon and zenon Logic.

The updating is carried out online. An internet connection is necessary for this.

**CONTENTS OF THE DOCUMENTATION UPDATE:**

The `Documentation Download Tool` supports the updates of:

- ▶ zenon and zenon Logic product documentation
- ▶ Driver Documentation
- ▶ Tutorials
- ▶ Glossary

**FILE FORMATS OF THE DOCUMENTATION UPDATE:**

The `Documentation Download Tool` supports the updates of:

▶ Online help for zenon and zenon Logic (.chm)

▶ zenon product documentation (.pdf)

Note: The tool is only available in English

**License information**

*Part of the standard license of the Editor and Runtime.*

# 5.1 Installation

The `Documentation Download Tool` is automatically installed with zenon.

# 5.2 Starting the program

To start the `Documentation Download Tool`:

▶ Go to the folder `C:\Program Files (x86)\Common Files\COPA-DATA\STARTUP`.

▶ Start the program `DokumentationDownloadTool.exe` by double clicking on it.

▸ The program start dialog opens
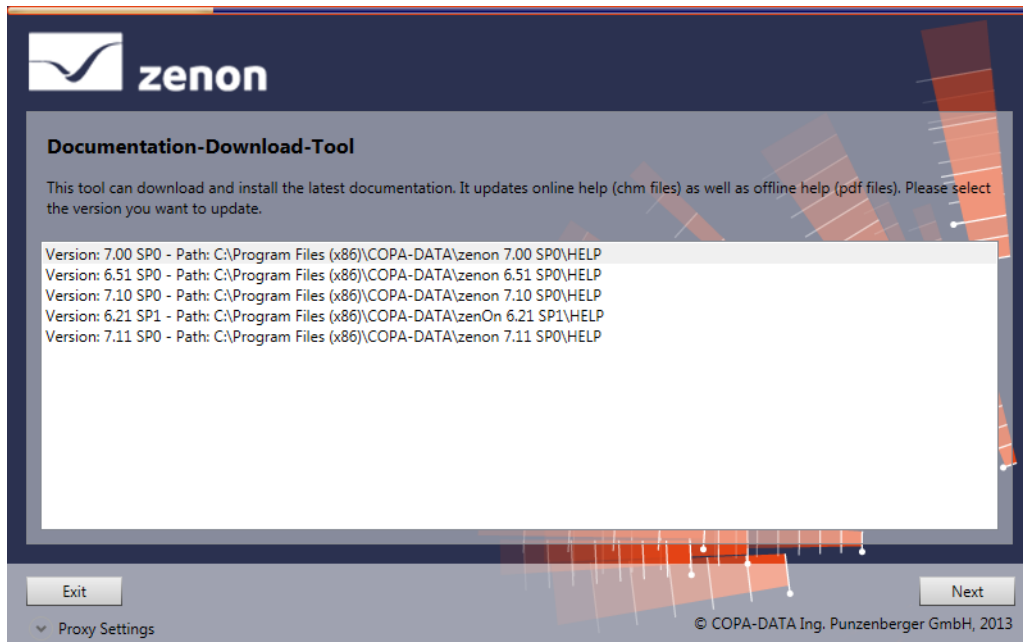


## 5.3 Navigation

It is possible to navigate through the individual dialogs by means of the navigation bar in the lower area of the dialog:
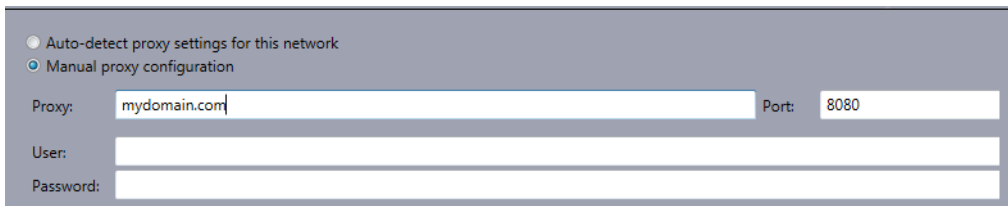


| Button | Description |
| --- | --- |
| **Exit** | Closes the **Documentation Download Tool** |
| **Back** | Goes back one dialog in the tool process. |
| **Next** | Goes forward one dialog in the tool process. |
| **Proxy Settings** | Opens/closes expandable list for the configuration of the proxy settings (on page 53).<br><br>Only active in the start dialog. |

## 5.4    Proxy Settings

The proxy settings of your network can only be configured using the **Proxy Settings** entry.

To call this up, click on **Proxy Settings** in the start window of the tool. It is only possible to call this up in the start dialog. This property is not active in subsequent dialogs.



| Parameters | Description |
|---|---|
| **Auto-detect proxy settings for this network** | The proxy settings of your system are used for communication with the internet.<br><br>(Default: active) |
| **Manual proxy configuration** | Enables the proxy settings to be configured. |
| Proxy: | Address of the proxy server |
| Port: | Port of the proxy server<br>(default: 8080) |
| User | User name on the proxy server (optional) |
| Password: | Password on the proxy server (optional) |

💡   **Information**

*The Documentation Download Tool notes these proxy settings. If you regularly change your password, you must also change the password in the proxy settings of the Documentation Download Tool.*

### 5.4.1    Incorrect proxy settings
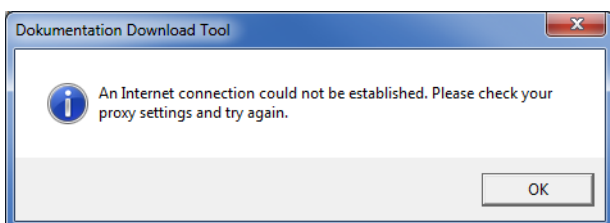
An error dialog appears with incorrect entries.

Confirm this error dialog with ᴏᴋ to automatically return to input of the **Proxy Settings**.

## 5.5 Selection of version

In this dialog, select the version of zenon to be updated.
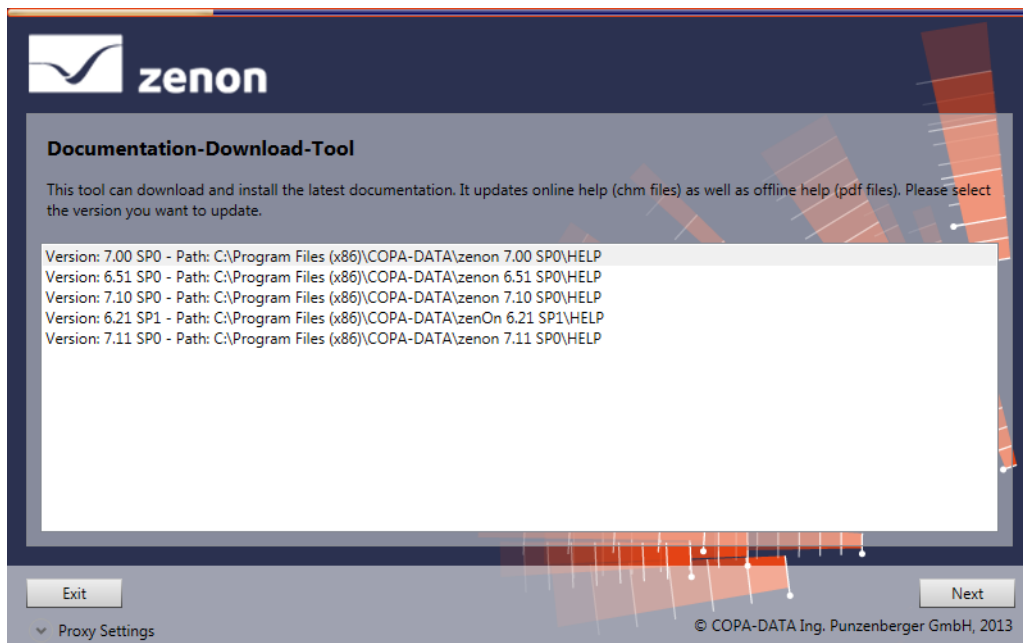


| Parameters | Description |
|---|---|
| **List of installed versions** | Lists the versions of zenon installed on the computer. Select the version to be updated by simply clicking. Note: only one version of COPA-DATA can be updated each time. Multiple selection is not possible. |
| `Exit` | Closes the `Documentation Download Tool` |
| `Next` | Goes forward one dialog in the tool process. |
| **Proxy Settings** | Not active in this dialog. |

## 5.6     Language dialog

In this dialog, you select the zenon language to be updated.



| Parameters | Description |
|---|---|
| **List of available languages** | Lists the languages available for zenon: <br><br> ▸ English (ENGLISH) <br><br> ▸ French (FRENCH) <br><br> ▸ German (GERMAN) <br><br> ▸ Italian (ITALIAN) <br><br> ▸ Russian (RUSSIAN) <br><br> ▸ Spanish (SPANISH) <br><br> Select the language to be updated by clicking on it. <br><br> Note: only one version of COPA-DATA can be updated each time. Multiple selection is not possible. |
| `Exit` | Goes back one dialog in the tool process. |
| `Back` | Goes back one dialog in the tool process. |
| `Next` | Goes forward one dialog in the tool process. |
| **Proxy Settings** | Not active in this dialog. |

### 5.6.1 No updates available

If online and offline help is up to date, a dialog appears:
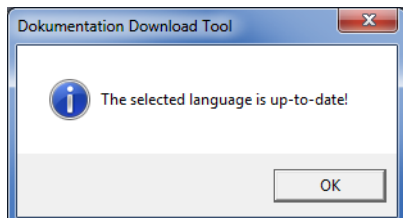
Clicking on the OK button reverts to the **Language** dialog.

### 5.6.2 Language-dependent content of zenon help

Available language content for zenon and     zenon Logic:

| Language | Embedded help | Online/offline help | Online/offline driver documentation |
|----------|---------------|---------------------|-------------------------------------|
| English | English | English | English |
| French | French | English | English |
| German | German | German | German |
| Italian | Italian | Italian | English |
| Russian | Russian | English | English |
| Spanish | Spanish | English | English |

## 5.7    Overview of available updates

Once the update conditions have been selected, a dialog with the available updates is displayed:
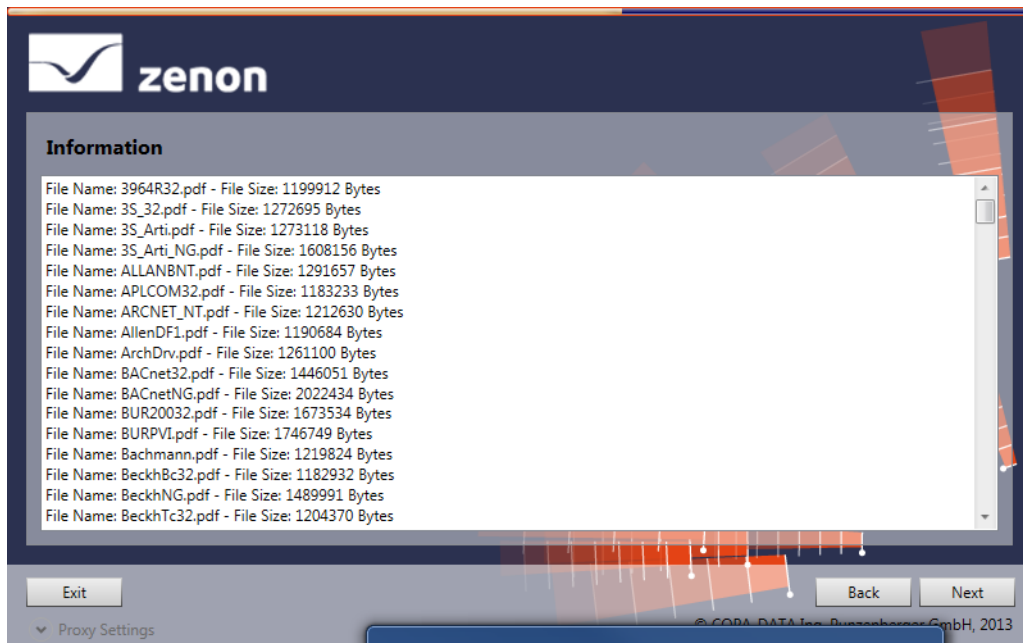


| Parameters | Description |
|---|---|
| **List of available Updates.** | List of the documents that are available for the selected version of zenon.<br><br>Note: the list is for information only. Selection is not possible. |
| `Exit` | Closes the `Documentation Download Tool` |
| `Back` | Goes back one dialog in the tool process. |
| `Next` | Goes forward one dialog in the tool process. |
| **Proxy Settings** | Not active in this dialog. |

## 5.8    Status dialog

This dialog shows the progress when downloading the PDF and/or online help file to be updated.
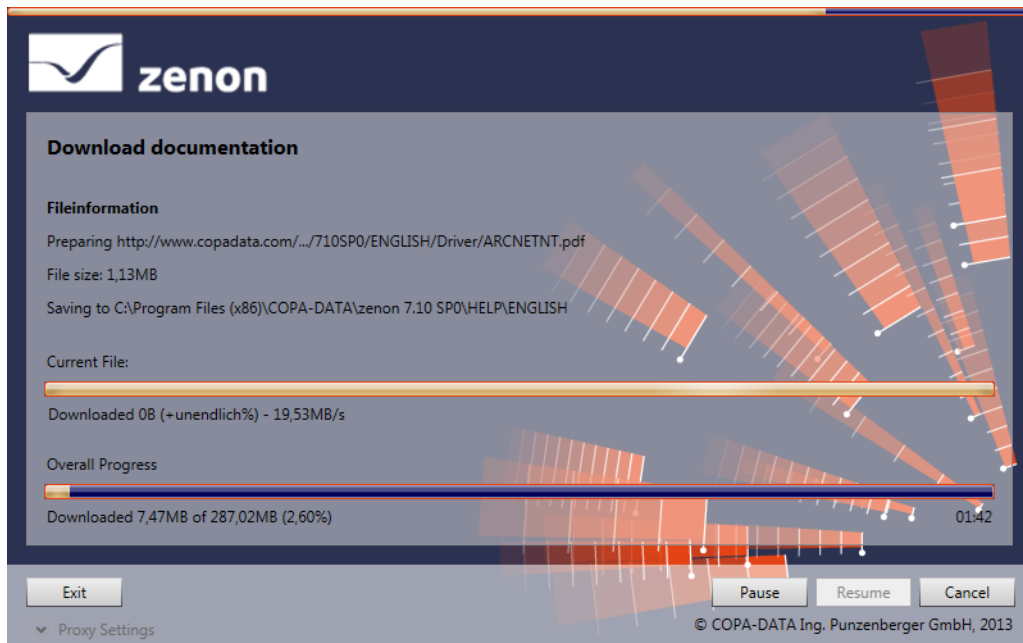
| Parameters | Description |
|---|---|
| **Fileinformation** | Detailed information on the file that is currently being downloaded: <br><br> ▸ File origin <br><br> ▸ File size <br><br> ▸ Save location on the local computer |
| **Current File:** | Status of the current file including current download speed |
| **Overall Progress** | Status of the complete update including percentage and remainder display |
| **Exit** | ▸ Cancels the download that is currently in progress <br><br> ▸ Closes the **Documentation Download Tool** |
| **Pause** | Pauses the current download |
| **Resume** | Resumes the download that was paused (by clicking on **Pause**). <br><br> This button is only active if the **Pause** button has been pressed beforehand |
| **Cancel** | Cancels the current download |
| **Proxy Setting** | Not active in this dialog. |

## 5.8.1    Download complete

The following dialog is shown once the download has been completed:
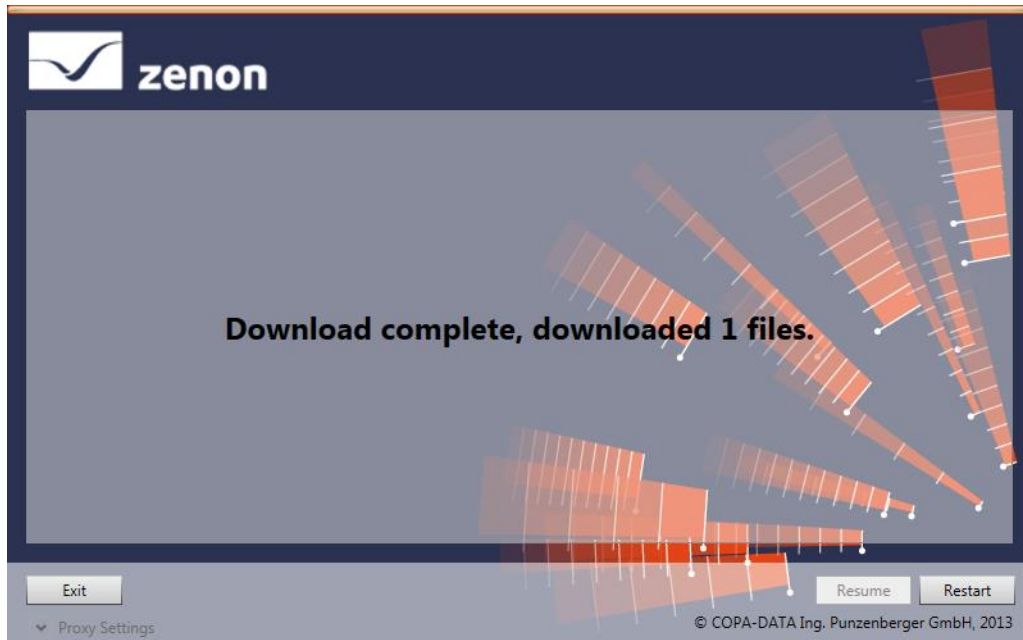


| Parameters | Description |
|---|---|
|  |  |
| `Exit` | Closes the `Documentation Download Tool` |
| `Resume` | Not active in this dialog. |
| `Restart` | Reverts to the start dialog (on page 51) of the tool. |
| **Proxy Settings** | Not active in this dialog. |

## 5.8.2    Cancel

The following dialog is displayed once the Cancel button has been clicked:
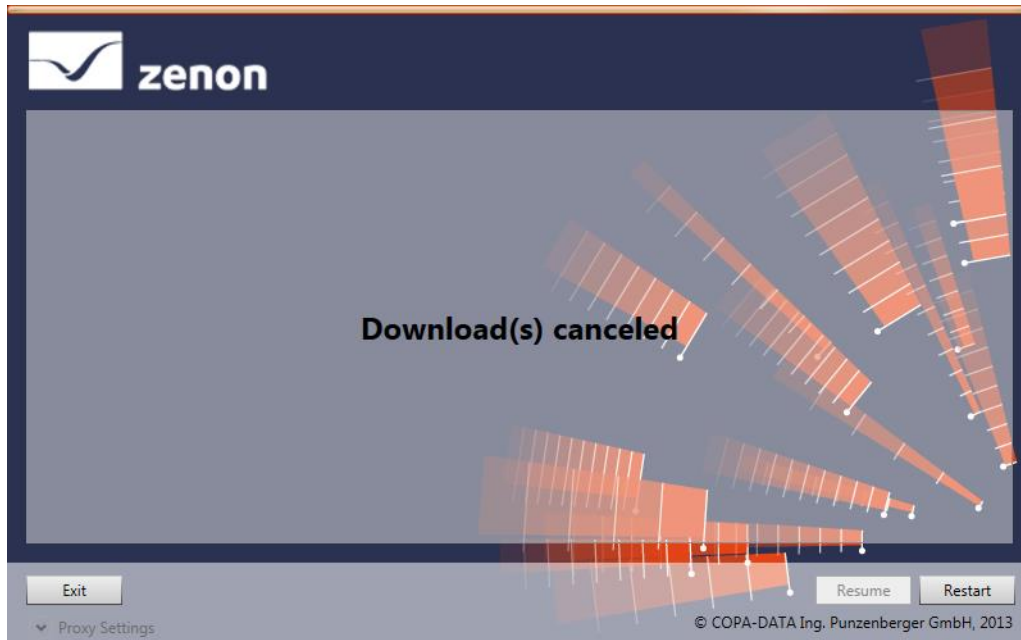


| Parameters | Description |
|---|---|
| `Exit` | Closes the `Documentation Download Tool` |
| `Resume` | Not active in this dialog. |
| `Restart` | Reverts to the start dialog (on page 51) of the tool |
| **Proxy Settings** | Not active in this dialog. |

# 6.  Startup Tool

The Startup Tool makes it possible:

▶ to start Editor and Runtime with certain parameters

▶ to run different zenon versions on one computer in parallel
(already installed zenon versions are automatically created in the Startup Tool)

▶ to administrate different SQL instances for the same zenon version

▶ to administrate the settings for different versions

▶ to define the language of the Editor and the Runtime before the start

▶ To define the language of the web client

> 📋 **License information**
>
> *Part of the standard license of the Editor and Runtime.*

> ⚠ **Attention**
>
> *The Startup Tool does not start when the service **zenAdminSrv** is not running. If it is not active, you can start it manually in the Windows* `Control Panel` *under* `Administrative tools/Services.`

## 6.1 Start dialog

You administrate the currently installed zenon versions in the start dialog. From version 7.10, you have the possibility to choose whether to start Editor and Runtime as a 32-bit application or as a 64-bit application.

If only a 32-bit version of zenon 7.10 was specified or an older version was detected, only one button is shown for the Editor and Runtime respectively:
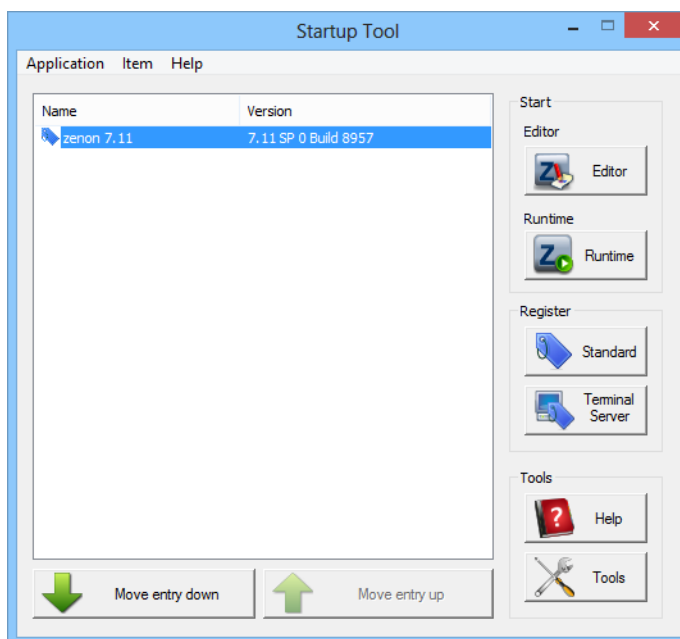
If both versions are specified, separate buttons for 32-bit and for 64-bit are displayed.

| Button | Function |
|---|---|
| `List of zenon versions.` | Shows all installed zenon versions. |
| `Move entry down` | Moves the selected entry in the list downwards. |
| `Move entry up` | Moves the selected entry in the list upwards. |
| `Editor` | Starts the Editor of the selected zenon version<br><br>Two separate buttons are available for 64-bit versions. The button for 64-bit contains a corresponding indication in the bottom left corner. |
| `Runtime` | Starts the Runtime of the selected zenon version<br><br>Two separate buttons are available for 64-bit versions. The button for 64-bit contains a corresponding indication in the bottom left corner. |
| `Register` | Registers all services of the selected zenon version.<br><br>▸ `Standard`: Registers zenon. `ZenSysSrv` is registered as a process.<br><br>▸ `Terminal Server`: Registers zenon for use with a terminal server. Procedures:<br>`ZenDBSrv` is deregistered and no longer re-registered and also not started.<br>`ZenSysSrv` is registered as a service.<br>The entries in `zenon6.ini` are amended for use on the terminal server.<br><br>If, in an entry, there are no parameters (on page 78) stored for **workspace** and/or **Runtime**, the current version is re-registered. This applies for registration as `standard` and as a `terminal server`. |
| `Help` | Opens online help. |
| `Tools` | Opens a dialog for starting additional applications of the selected zenon version<br><br>If the tools for a valid 64-bit version are opened, then the tools are displayed in two lists for 32-bit tools and 64-bit tools. |

**PROCESSES DURING STARTING**

When starting the Editor or the Runtime, data from the start settings are written to the `zenon6.ini` file. Existing settings in the INI file    are overwritten.

Since version 5, network communication has been handled with the two services `zenNetSrv.exe` and `zenSysSrv.exe`. Both files must exist in the zenon folder. As these services are version dependent, they must be registered for the appropriate version.

> ⚠ **Attention**
>
> *After conversion of a project into a later zenon version, this can no longer be edited with the previous version and will no longer run on it. However, the backup version created during the conversion can still be used in the original editor.*
>
> *For network projects, the same zenon Editor versions must be started on the server and clients.*

## 6.1.1 Application

| Entry | Function |
|---|---|
| `Options` | Opens the dialog for configuring the settings. |
| `Exit` | Closes the Startup Tool. |

**OPTIONS**

▶ The `Options` entry in the `Application` menu opens the dialog to configure the properties for:

▶ General (on page 66): general settings

▶ Network configuration (on page 67): Configuration of the network and the strong encryption of network communication

▶ Listening ports (on page 70): Configuration of the listening ports

▶ Service startup: Start programs as a service

## General

General settings:
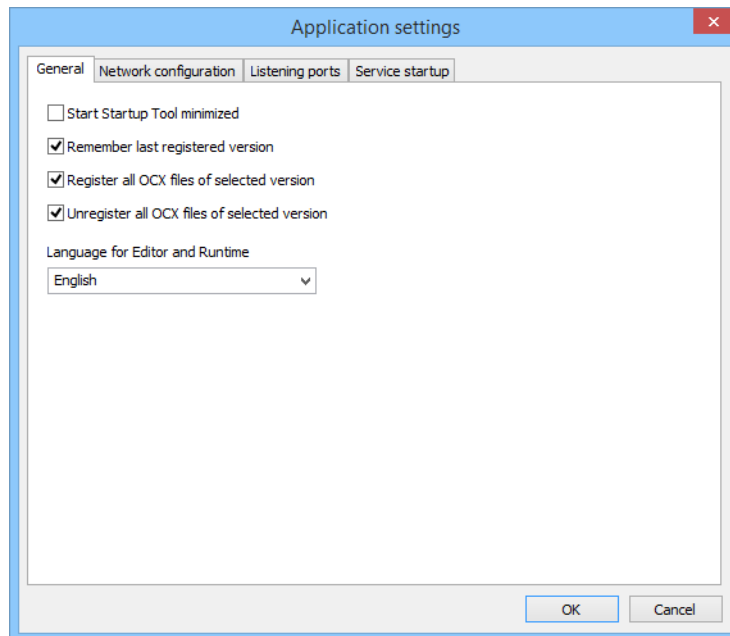
| Parameters | active | inactive |
|---|---|---|
| **Start Startup Tool mimimized** | Starts the Startup Tool minimized. You can reach the tool with the help of its icon in the task bar.<br><br>The context menu offers all possible actions from the Start dialog (on page 62) for the active zenon. | Opens the tool on the desktop (default). |
| **Remember last registered version** | Sets the chosen version as standard and selects it automatically at the next start. Then the version is not registered again (default). | Offers the first version in the list when starting the Startup Tool. When the Editor or the Runtime are started, the respective version is always registered again. |
| **Register all OCX files of selected version** | registers all OCX files (ActiveX controls) which exist in the program folder.<br><br>This option makes sure that there are always appropriate ActiveX controls for each version (default).<br><br>Attention: It has no influence on the registration of ActiveX controls and COM servers which are listed in the individual settings (on page 84) of the respective version. | registers only the pre-set components.<br><br>This option accelerates the registration process and is appropriate for all projects which do not use ActiveX. |
| **Set Language for Editor or Runtime** | Starts Editor or Runtime with the language selected in the selection list.<br><br>Makes sure that zenon always uses the defined language when started from the Startup Tool. This does not influence the direct start of >CD_PRODUCTNAME<.exe. | Starts Editor or Runtime with the language defined in zenon6.ini. There the set language is the language which has lastly been used in zenon or defined there under Options -> Settings -> Editor and Runtime selected language (default). |

## Network configuration

The following applies for zenon from version 7 onwards:

▶ you can use IPv6

▶ you can encrypt the transfer in the network.

This dialog configures:

▶ Time-outs

▶ the use of TCP/IP via IPv4 or IPv6

▶   the serious encryption of the network communication at the local computer

**Application settings**

General | Network configuration | Listening ports | Service startup

General settings

Network communication timeout
[ 30 ] s

Network module timeout
[ 30 ] s

☑ Time synchronisation with server project

☐ Use IPv6 for all TCP/IP connections (version 7.0 and higher).
ATTENTION: If you activate this setting you can no longer use
versions older than 7.0!

Encrypt network communication (version 7.0 and higher)

☐ Encrypt network communication

Password
[                    ]

Confirm password
[                    ]

[ OK ]   [ Cancel ]

| Parameters | Description |
|---|---|
| `General settings` | General settings. Changes of these settings are written to the registry in files `zenon6.ini` or `zenon.ini` and overwrite possibly varying manual configuration. Changed settings must be carried out for all Runtime computers or all connected stations. At changes of the **IPv6** settings, the computer must be restarted. Changes are carried out after leaving the dialog only after the confirmation of a warning message with click on button `Yes`. |
| **Network communication timeout** | Time-out for network communication in seconds. Default = 30 Equals entry **NET_TIMEOUT_MSEC=** in file `zenon6.ini`. |
| **Network module timeout** | Time-out for module communication in seconds. Default = 30 Equals entry **NET_NETMODULE_TIMEOUT_MSEC=** in file `zenon6.ini`. |
| **Time synchronisation with server project** | `Active`: Time is compared with a server project (default). `Inactive`: Time is not compared (for circular redundancy, for example) Equals entry **TIMESYNCH** in file `zenon6.ini`. |
| **Use IPv6 for all TCP/IP connections** | `Active`: All TCP connections are only established via IPv6. `Inactive`: All TCP connections are only established via IPv4. Dual operation is not possible. Equals entry **USEIPV6=** in file `zenon6.ini`. Note: If this option is changed, the computer must be rebooted. The change must also be carried out on all connected stations. The following components are not affected by the setting:  ▸ Driver communication with the PLCs  ▸ Protocol communication in the Process Gateway plug-ins  ▸ Workbench and Runtime communication in zenon Logic Attention: Only works with version 7 onwards. No versions prior to version 7 can be started if this is active. |
| `Encrypt network communication` | Settings for serious encryption in the network |
| **Encrypt network communication** | `Active`: Communication in the network is encrypted. |

| | |
|---|---|
| | Note: This encryption is also applicable for zenon web client communication. |
| **Password** | Enter password. |
| | For the criteria, see the "`Network encryption password`" section in the Strong encryption of network communication chapter. |
| | The displayed length is always set at `20 characters`, in order to hide the actual length. |
| | The password defined here is stored encrypted in the `zenon6.ini`. |
| **Verify password** | Enter the password for verification again. |

⚠ **Attention**

If entries were changed manually in the local `zenon6.ini`, they are overwritten as soon as the confirmation message is answered with "`Yes`" at the registration.

**MESSAGES**

For explanations about system messages and error messages see chapter Message at registration (on page 86).

💡 **Information**

*You can find notes on error messages from strong encryption in:*

*Network handbook -> Strong encryption of network communication chapter -> Error messages section.*

**Listening ports**

In this tab, the ports that are used by zenon can be individually configured for individual applications. The settings that were saved in the respective `zenon6.ini` file are used in Runtime.

> ⚠ **Attention**
>
> *Note the following during configuration:*
>
> ▸ Changes in this tab can trigger a restart of the computer.
>
> ▸ All computers with which communication takes place must have the same settings.
>
> ▸ These settings are not available under Windows CE.
>
> ▸ If an IP address is defined, it must be amended if the setting for IPv6 is activated or deactivated
>
> ▸ If a defined network address is not connected at the time when the service is started, no listening socket is opened
>
> ▸ Error messages are not logged in the diagnosis server but in the Windows application event log

## LISTENING PORTS DIALOG
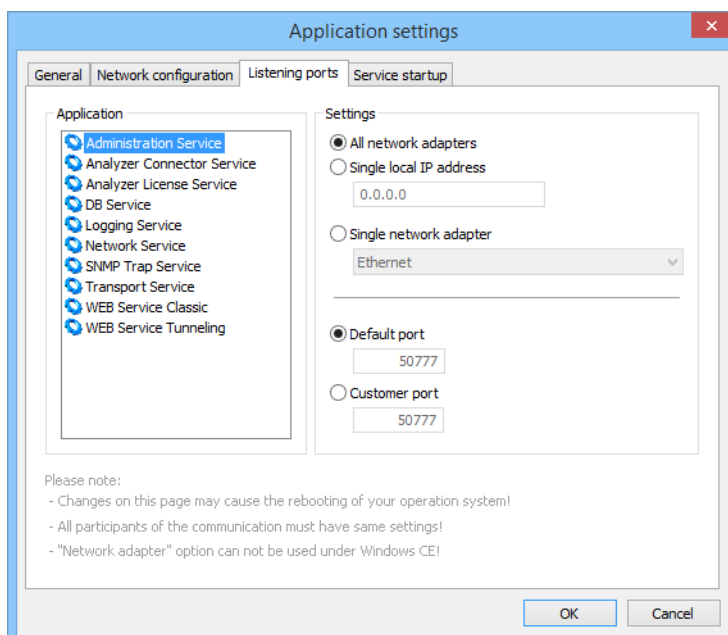
| Parameters | Description |
|---|---|
| Application | List with all configurable applications. The selected application can be configured by means of the options in Settings. |
| Settings | Settings for the application selected in Application. |
| All network adapters | All available network cards are used for the binding of the listening ports. (as before). This is a standard setting. |
| Single local IP address | The local address defined here is used for the binding of the listening ports. Supported protocols: <br> ▸ IPv4 <br> ▸ IPv6 |
| Single network adapter | The first address of the network card defined here is used for the binding of the listening ports. |
| Default port | The standard port number is used for the binding. |
| Customer port | The port number defined here is used for the binding. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

**PORT ASSIGNMENT**

Assignment of the standard ports to applications:

| Application | Standard port |
|---|---:|
| Administration Service | 50777 |
| Analyzer Connector Service | 50778 |
| Analyzer License Service | 50779 |
| DB Service | 1103 |
| Logging Service | 50780 |
| Network Service | 1100 |
| SNMP Trap Service | 50782 |
| Transport Service | 1101 |
| WEB Service Classic | 1102 |
| WEB Service Tunneling | 8080 |

## Service startup

Programs can be started automatically using the `zenStartupMgr` service. You can use this to start Runtime automatically as a service.

### DIALOG SERVICE STARTUP

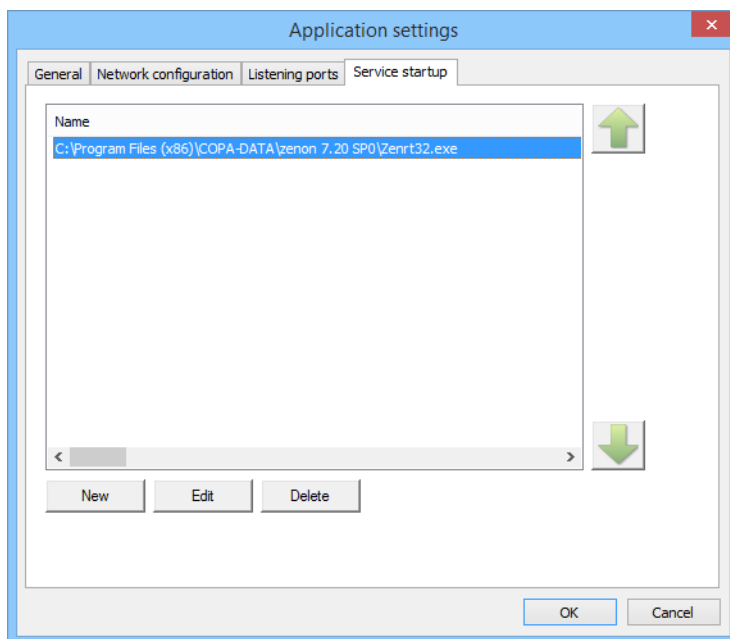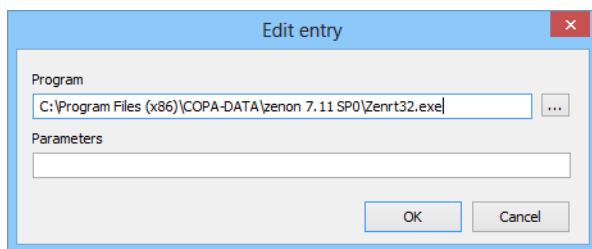| Parameters | Description |
|---|---|
| `Liste Services` | List of configured services. |
| `New` | Opens dialog to select a program. |
| `Edit` | Opens the dialog to edit the highlighted entry. |
| `Delete` | Deletes the highlighted entry. |
| `OK` | Applies all changes in all tabs and closes the dialog. |
| `Cancel` | Discards all changes in all tabs and closes the dialog. |

**SELECT PROGRAM DIALOG**



| Parameters | Description |
|---|---|
| `Program` | Path to the program that is to be started as a service. A click on the ... button opens the file selection dialog. <br> Maximum length: `259 characters` |
| `Parameters` | Input of parameters. <br> Maximum length: `259 characters` |
| `OK` | Applies settings and closes the dialog. |
| `Cancel` | Discards all changes and closes the dialog. |

**START RUNTIME AS A SERVICE**

To start Runtime as a service:

1. Register the file `zenStartupMgr.exe` as a service:

2. Configure the properties for sign-in.

3. Start, if necessary, Remote Transport with `zenStartupMgr`

4. Define the Runtime to be started in the Startup Tool

5. Configure a start delay for zenon Runtime if you are using a dongle license

You can find details on this in the Runtime manual in the Starting Runtime as a service chapter.

Attention: If Runtime is started using the `zenStartupMgr`, it can no longer be stopped or restarted by users.

### REGISTER SERVICE

To register `zenStartupMgr.exe` as a service:

1. Open the command line.

2. Go to the save location of the file `zenStartupMgr.exe`.
   (default with 32-bit OS: `%ProgramFiles(x86)%\Common Files\COPA-DATA\zenStartupMgr`
   (default 64-bit OS: `%ProgramFiles\Common Files\COPA-DATA\zenStartupMgr`)

3. Register the file as a service with the `zenStartupMgr.exe –service` command.
   Note: The service, if it is already running, is first stopped and then registered. If `zenStartupMgr` is running, it is closed.

### CONFIGURE SERVICE FOR THE USE OF MANY DRIVERS

Windows as an operating system limits the number of windows that can be created due to its fixed, reserved desktop memory, depending on the version and possible integration with the desktop.

| Version/action | Interactive Desktop | Non-Interactive Desktop |
|---|---|---|
| Windows 7 32-Bit | 12 MB | 512 KB |
| Windows 7/Windows Server 2008 R2 64-bit | 20 MB | 768 KB |

zenon drivers each need several windows.    The number of drivers that can be used can be influenced using the **Allow data exchange between service and desktop** option in the properties of the service.

▶ `Inactive` A maximum of 20 drivers can be started.

▶ `Active`: As many drivers as there are in a Runtime started as a user process can be started.

To activate the **Allow data exchange between service and desktop** option:

1. Open the Windows Service Manager.

2. Open the properties of the `zenStartupMgr` service.

3. Go to the `Login` tab.
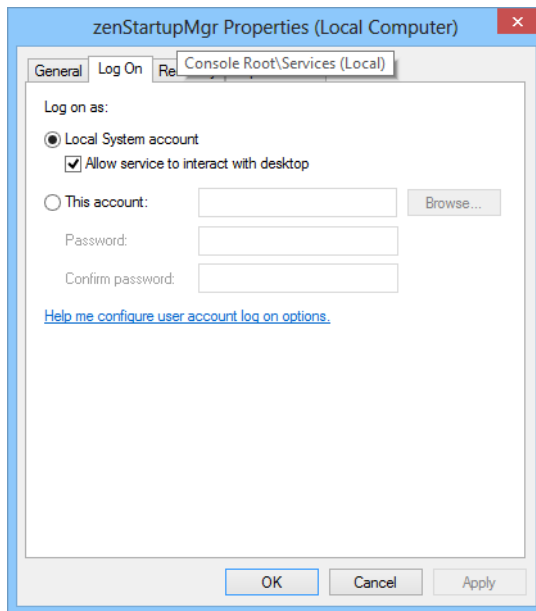


4. Activate the **Allow data exchange between service and desktop**.
   This service must be configured to `automatic` start type. With the service active, the user logged on to the computer is notified if the zenon Runtime as a service opens an additional window, for example in the event of a new alarm and active status line.

   Note Windows 8/Server 2012: In order for the service to be able to be started, the entry must be set correctly in the Windows registry:

   a) Go to the entry
      `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Windows`.

   b) Open or create the DWORD value **NoInteractiveServices**.

   c) Set the decimal value of `1` to `0`.

5. To stop Runtime messages being displayed on the desktop:
   Deactivate the `Detection of inactive services` service.


## 6.1.2    Item


The menu `Item` has the following entries:

| Entry | Function |
|---|---|
| `New` | Creates a new entry in the list and opens dialog `Properties (on page 77).` |
| `Delete` | Deletes the selected entry after confirming a confirmation message. |
| `Properties` | Opens dialog `Properties` (on page 77) `for the` selected entry. |

### 6.1.3    Help

In menu help the following entries exist:

▶    Help: opens the online help

▶    Info about: shows current version information.

## 6.2    Properties

In dialog **Properties** the parameters for each entry are defined:

| Entry | Function |
|---|---|
| **General** | General settings |
| **Database** | Settings for the database connection |
| **Extras** | Settings for registering ActiveX controls (OCX) and COM servers (DLL) and for starting additional programs or batch files. |

## 6.2.1 General

In this part, details about the zenon versions are entered. The path to the 32-bit version of zenon is absolutely necessary. If the Startup Tool detects a 64-bit version, the path to the 64-bit version is also unlocked for input.
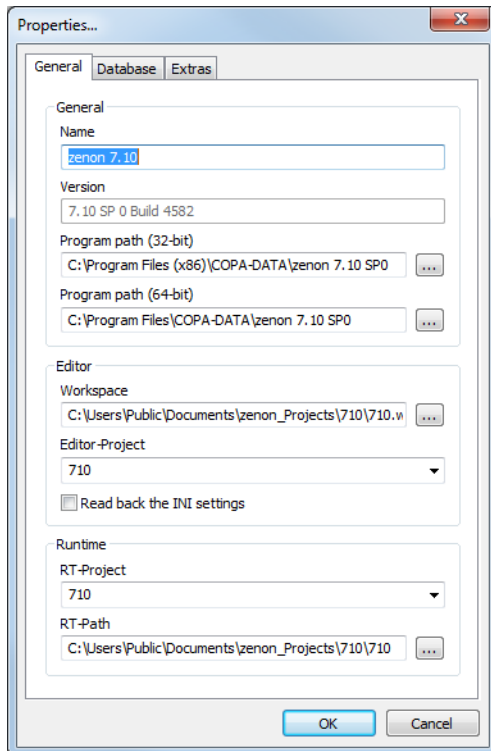


The following properties are available for a selected entry:

## GENERAL

| Parameters | Description |
|---|---|
| Name | Distinct name as it should be displayed in the list. This entry is absolutely essential. |
| Version | Startup Tool automatically enters the version number of zenon. For this you must first select the program path under `Path`. |
| Programm path (32-bit) | Program path in which the executable 32-bit version of the zenon file (Zenrt32.exe) is located. <br><br> If a 64-bit version of zenon is detected here, the **Program path (64-bit)** property is also unlocked for input. |
| Programm path (64-bit) | Program path in which the executable 64-bit version of the zenon file (Zenrt32.exe) is located. <br><br> Input only possible if the path to the 32-bit version was stated and a 64-bit version was detected by zenon. <br><br> As soon as both paths have been entered correctly, the buttons for starting Editor and Runtime are divided into two buttons, one for 32-bit and one for 64-bit. |

## EDITOR

| Parameters | Description |
|---|---|
| Workspace | The desired workspace when the Editor is started. As soon as this is entered all projects which are in this workspace are displayed automatically in the drop-down list under **Editor project**. |
| Editor-Project | Select the project which should be active after the Editor started. |
| Overwrite INI settings | `Active`: The settings of this dialog are always used when the Editor is started. Changes made while working with the Editor are discarded. (This affects `Workspace`, `Editor-Project`, `RT-Project` and `RT-Path`). |
| Take over INI settings | `Active`: All amended settings for `Workspace`, `Editor project`, `RT project` and `RT path` are saved in `zenon6.ini` after the Editor is closed, read into the Startup Tool and used again on the next restart. |

## RUNTIME

| Parameters | Description |
|---|---|
| RT-Project | Project that is set as the start project for Runtime. |
| RT-Path | Path of the project. If the Runtime project is part of the workspace, the path is entered automatically. |

**Info**

**UNKNOWN PARAMETERS?**

If the settings for the workspace are unknown, use the following approach.

1. Enter `Name`, `Path` and `Workspace`

2. Leave `Editor-Project`, `RT-Project` and `RT-Path` empty

3. Activate `Read back the INI settings`

4. Leave dialog by clicking `OK`.

*After the Editor has been started and closed once, the start settings are automatically taken from the INI file.*

## 6.2.2    Database

Define the database properties. It is possible to use different SQL instances for the different entries (zenon versions).
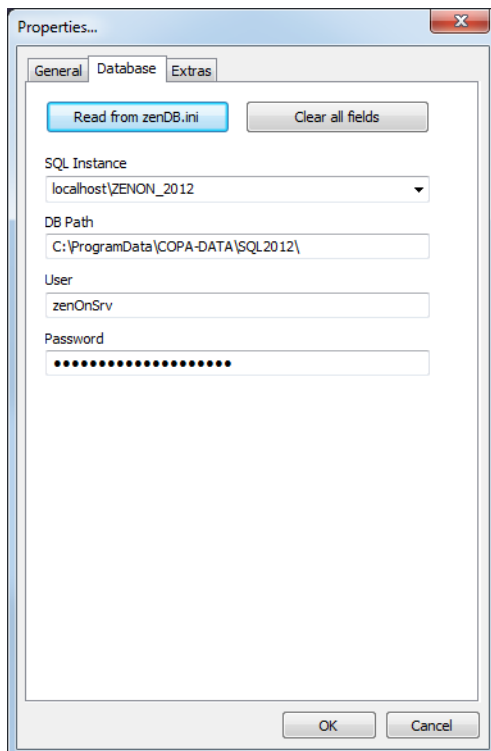
> ⚠️ **Attention**
>
> *As of version 6.51 the SQL instance can be defined and the password is saved in an encrypted form. New entries have a higher priority than existing entries.*
>
> *Compatibility: If nothing is changed, the existing entries remain valid. If you change an entry for version 6.51 or higher, the new entries are valid. Older versions must be maintained separately. You can find the settings for version previous to 6.51 in chapter Database previous version 6.51 (on page 83).*
>
> *Display dialog: The display of the dialog is automatically adopted to the selected version (previous 6.51 (on page 83), as of 6.51).*
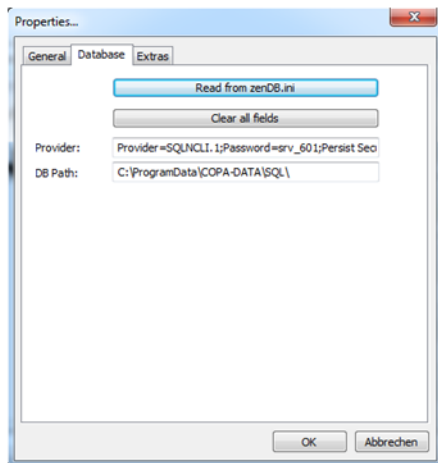
| Entry | Function |
|---|---|
| `Read from zenDB.ini` | Clicking on the button reads off the settings from the `zenDB.ini` file and the following fields are automatically filled:<br><br>&#9656;  **SQL instance**<br><br>&#9656;  **DB Path**<br><br>&#9656;  **User**<br><br>&#9656;  **Password** |
| `Clear all fields` | All input field are cleared.<br><br>Empty entries are not written to zenDB.ini at registering. |
| **SQL Instance** | Name of the SQL server instance which should be used.<br><br>The name can be entered directly in the input field or can be selected from the drop-down list.<br>Note: By clicking on the drop-down list the local computer is searched for instances which are then listed. The search may take some time. |
| **DB Path** | Path for the SQL database of the zenon projects.<br>For example:  `C:\ProgramData\COPA-DATA\SQL\`<br><br>Attention: Different SQL Servers (for example 2008R2 and 2012) must use separate paths.<br><br>Background: When converting projects the GUID stays the same. If the same folders are used, both instances overwrite each others database files. |
| **User** | User name for the database.<br><br>**Necessary rights**<br><br>In the SQL Server the user must have the following **Server roles**:<br><br>&#9656;  public<br><br>&#9656;  sysadmin |
| **Password** | Password of the user. It is stored encrypted. The entry length is always displayed with 20 characters regardless of the actual length.<br><br>Attention: The encryption is done via the Startup Tool. Therefore you must carry out the database setting via the Startup Tool. |

These settings are saved in the `zenDB.ini` file.

## Database previous version 6.51

Setting of the database property before zenon 6.51:



| Entry | Function |
|---|---|
| **Read from zenDB.ini** | After a click on the button, the settings from file `zenDB.ini` are read and the fields **Provider**, **DB Path** are filled automatically. |
| `Clear all fields` | All input field are cleared.<br><br>Empty entries are not written to zenDB.ini at registering. |
| **Provider** | Connection to the SQL instance. Important information:<br><br>▸ Instance name<br><br>▸ Used provider<br><br>▸ User name<br><br>▸ User password<br><br>For example:<br>Provider=SQLNCLI.1;<br>Password=srv_000;<br>Persist Security Info=False;<br>User ID=zenOnSrv;<br>Initial Catalog=%s;<br>Data Source=localhost\ZENON_DEV; |
| **DB Path** | Path for the SQL database of the zenon projects.<br>For example: `C:\ProgramData\COPA-DATA\SQL\`<br><br>Attention: It is necessary that SQL Server 2005 and SQL Server 2008 R2 use different folders.<br><br>Background: When converting projects the GUID stays the same. If the same folders are used, both instances overwrite each others database files. |

> ⚠️ **Attention**
>
> *The entry for Provider differs in this dialog from the entry in the zenDB.ini.*
>
> *`Dialog`: String starts with `Provider=...`*
>
> *`zenDB.ini`: String starts with `Provider=Provider=...`*

## 6.2.3    Extras

Here, you create ActiveX controls (*.ocx) or COM servers (*.dll) which should be registered together with the respective zenon version. The OCX and DLL can originate from any source, i.e. they can be written by you or by other manufacturers. Additionally you can define programs which are carried out before the starting or after the closing the Editor or the Runtime.
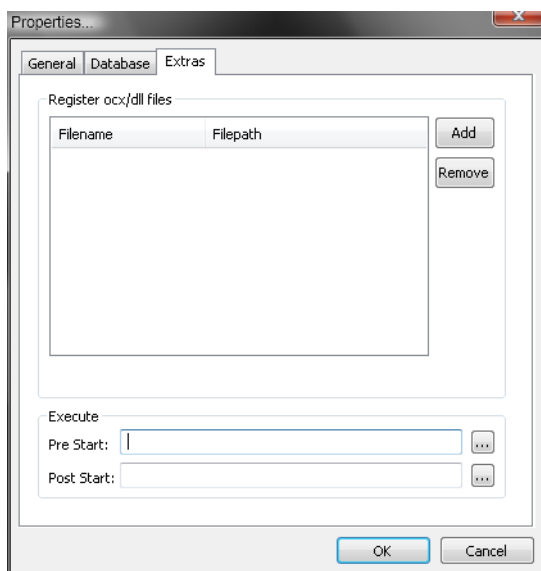


**REGISTRATION ACTIVEX CONTROLS - COM SERVER**

All files listed here are automatically registered together with the respective zenon version - independent of the central setting `register`.

| Parameters | Description |
|---|---|
| **Filename/Filepath** | List of all files to be registered |
| `Add` | opens the Windows dialog for selecting a file to be registered. There you can select OCX or DLL files individually and add them to the list. First select the wanted file type (OCX or DLL). All files are saved with path information. If the path changes, remove the link with `Remove` and create a new one. |
| `Remove` | Removes all selected entries from the selection list of the files to be registered. |

## PRE-START AND POST-START PROGRAMS

With Pre Start and Post Start, you can define programs and batch files which should be executed before starting or after closing zenon.

| Parameters | Description |
|---|---|
| **Pre Start** | External program that should be started, before the Editor or Runtime is started. |
| **Post Start** | External program that should be started, after the Editor or Runtime is closed. Attention: Post Start is only executed if the **Read back the INI settings** (Item->Properties->General) option was activated. |

# 6.3 Message at registering

## POP-UP AT REGISTERING

| Message | Meaning |
|---|---|
| You have changed the IPv6 setting. All internal TCP/IP connections will be switched to IPv6/IPv4.<br><br>To ensure that all affected components are properly switched you have to restart the computer! You will also have to change this setting on all connected station!<br><br>Do you really want to apply the change? | You change the settings for the IP protocol from IPv4 to IPv6 or vice versa.<br><br>After the changes you must restart the computer for all services to be adapted accordingly. The change must also be carried out on all connected stations.<br><br>These changes are written to `zenon6.ini` or `zenon.ini` together with the registration and overwrite any manual configurations. |
| Gerneral network configuration settings will be changed.<br><br>You have to restart the runtime to apply the changes!<br><br>Attention: Do not forget to adept the settings on other stations as well.<br><br>Apply settings.<br><br>Are you sure this is your intent? | You change general settings (on page 67) in the same ways as time outs.<br><br>These changes are written to `zenon6.ini` or `zenon.ini` together with the registration and overwrite any manual configurations.<br><br>You must adapted changed settings for all Runtimes. |

## MESSAGE AT REGISTERING

At registering the service all steps are displayed in an own window which closes after 4 seconds automatically. When an error occurs, an warning message informs you about the cause. After confirming the message the procedure is canceled. zenon is not started. Possible error messages:

| Message | Reason | Hint |
|---|---|---|
| `Couldn´t find zenNetSrv Service!` | File `zenNetSrv.exe` is missing from the zenon program folder or a wrong version is available. | Most of the time the fastest an safest solution is a new installation of zenon. |
| `zenNetSrv.exe still running!` | The service `zenNetSrv.exe` could not be stopped. | It is possible that a security tool is running on the computer which prevents the access. |
| `Couldn´t find zenSysSrv Service!` | File `zenNetSrv.exe` is missing from the zenon program folder or a wrong version is available. | Most of the time the fastest an safest solution is a new installation of zenon. |
| `zenSysSrv.exe still running!` | The service `zenSysSrv.exe` could not be stopped. | It is possible that a security tool is running on the computer which prevents the access. |

# 6.4 Command line

You can also operate the Startup Tool using the command line. For this file zenon_Startup.exe must be present in the system path. You can find the file

▶ for Windows 7/8 in the `C:\Program Files\Common Files\COPA-DATA\STARTUP` folder

In the commando line you can:

▶ create new entries (on page 88)

▶ reorganize (on page 91) existing entries (e.g. after older versions have been deleted)

▶ register (on page 91) entries

## 6.4.1 Parameters

The input is started with **`zenon_Startup.exe`** followed by a **Parameter** and possible **field names.**

Parameters:

| Parameters | Function | Field name | Return value |
|---|---|---|---|
| -new | creates a new entry. | yes, list see also new (on page 88) | `0` or `1` |
| -reg | registers services | `Name of the entry` | none |
| -reorg | checks and reorganizes existing entries | not available | none |

If the startup tool is only called up with **-reg**, only the version is re-registered. In doing so, `zenon6.ini` is accessed on a read-only basis only. The version defined in the **[PATH]** section is registered; all parameters are taken from `zenon6.ini`.

**USING SEVERAL PARAMETERS AT ONCE:**

It is possible to use several parameters at once. If several **-new** parameters are used at once, the return value cannot be evaluated unambiguously.

In general when several parameters are used, it is proceeded in the following order:

1. **-new**: Create new entries.
2. **-reg**: Register the stated entry.
3. **-reorg**: Remove all invalid entries for deleted zenon versions.

## new - Creating new entries

Parameter **-new** is used for creating new entries. It needs at least two field names:

▶ **NAME** as unique name for the entry

   If the name of the entry is already available, no entry is created.

▶ **PATH** as path in which zenon is stored.

**SYNTAX**

The syntax is constructed as follows: zenon_Startup.exe -> Parameter > Field name="TEXT"

1. `zenon_Startup.exe`
2. Space
3. Parameters
4. Space
5. Field name
6. = character
7. opening quotation marks

8. Text

9. closing quotation marks

> **Example**
>
> *zenon_Startup.exe -new NAME="New entry" PATH="C:\Example Directory\zenon"*

**FIELD NAME**

The following field names can be used:

| Field name | Mandatory field | Description |
|---|---|---|
| **NAME** | X | Unique name of the entry.<br><br>For example: NAME="**Test**" |
| **PATH** | X | The user path in which zenon is saved.<br><br>For example: PATH="C:\Program Files (x86)\COPA-DATA\zenon 7.10 SP0" |
| **PATH64** | - | The application path, in which the 64-bit version of zenon is located.<br><br>For example: PATH="**C:\Program Files\COPA-DATA\zenon 7.10 SP0**" |
| **PROJECT_RT** | - | Name of the Runtime project which should be started.<br><br>For example: PROJECT_RT="**Test project**" |
| **PROJECT_RT_PATH** | - | The Runtime folder of the project (see **PROJECT_RT**).<br><br>For example: PROJECT_RT_PATH="C:\Users\Public\Documents\zenon_projects\test projekt" |
| **PROJECT_ED** | - | The project which should be activated in the Editor.<br><br>For example: PROJECT_ED="**Test project**" |
| **WSP** | - | The workspace with which the Editor should be loaded.<br><br>For example: WSP="C:\Users\Public\Documents\zenon_projects\DEMO622.WSP6" |
| **SQLSRV** | - | Name of the SQL Server which should be used by the Editor.<br><br>For example: SQLSRV="MSSQL$ZENON_DEV" |
| **PROVIDER** | - | Provider string for the initialization of the SQL connection.<br><br>For example: PROVIDER="Provider=SQLNCLI.1;Password=000;Persist Security Info=False;User ID=zenOnSrv;Initial Catalog=%s;Data Source=localhost\ZENON_DEV;" |
| **DBPATH** | - | Path for the SQL database which should be used<br><br>For example: DBPATH="C:\ProgramData\COPA-DATA\SQL\" |
| **PRESTART** | - | Program call which is executed before the start of the Editor or the Runtime or the registering of this version.<br><br>For example: PRESTART="C:\zenon versions\zenon 6.50\Dlls\zenVNCCli.exe" |
| **POSTSTART** | - | Program call which is executed after the Editor is closed.<br><br>For example: POSTSTART="C:\zenon versions\zenon 6.50\Dlls\zenVNCCli.exe" |

| | | Attention: Post Start is only executed when in the Startup Tool or in Startup.ini option **Read back the INI settings** (Item -> Properties -> General) is activated. |
|---|---|---|

The field names are separated by spaces.

> 💡 **Information**
>
> *Paths with spaces must always be put between parentheses.*

**RETURN VALUES**

0 - execution faultless

1 - entry could not be created

## reorg - reorganizing of entries

Parameter **-reorg** checks all entries whether the linked zenon version is still available in the file system. If the application files are no longer found, the entry is finally deleted from the Startup Tool.

The command does not provide a return value. After execution the Startup Tool is started.

Example: `zenon_Startup.exe -reorg`

## reg - register entries

The **-reg** parameter registers all necessary services in the folder of the stated entry. It is called up via:

▶ **-reg** `"Name of the entry"`

If the Startup Tool has already been started, nothing is registered but the Startup Tool is moved to the foreground.

The command does not provide a return value.

> 📄 **Example**
>
> *zenon_Startup.exe -reg "Version 6.50"*
>
> *registers version 6.50.*
>
> Prerequisite: there is an entry with this name in the Startup Tool.

# 7. System Information Collector

When solving problems, COPA-DATA Support may ask for the relevant data about your operating system and zenon. The easiest way for you to create this data is in an automated manner with the System Information Collector and then sending this to Support.
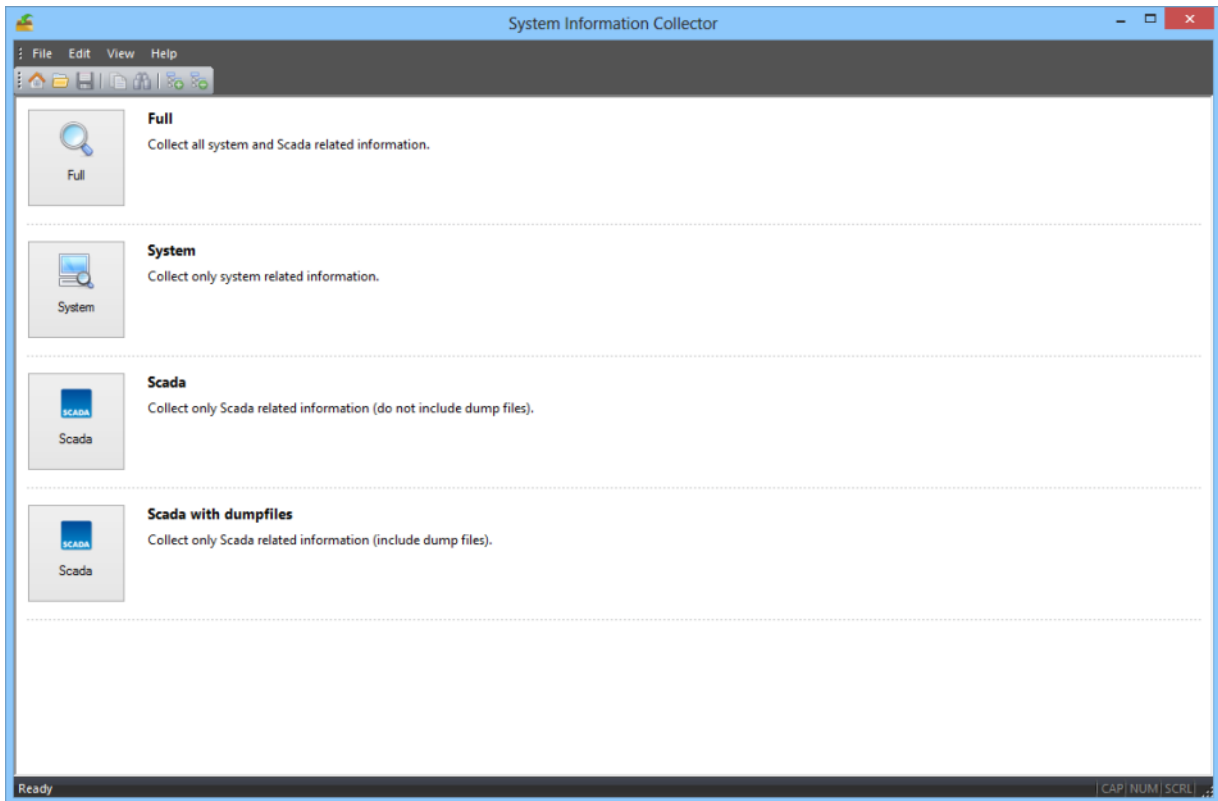
## 7.1 Starting the System Information Collector

The `System Information Collector` is also installed when zenon is installed.    It is located at:

▶ Computer in the path: `%Program Files (x86)%\Common Files\COPA-DATA\STARTUP`

▶ Installation medium in the path `\Additional Software\System Information Collector`.

To start the `System Information Collector`:

1. Windows 8: enter `SIC` as a search term for `Apps` on the desktop
   Windows 7: go to Start/All Programs/zenon/Version Independent Tools
   or: start it from the installation medium

2. Click on `System Information Collector`

3. The `System Information Collector` starts



## MENU AND TOOL BAR

### MENU

The following options are available to you in the menu:

- ▶ **File**
    - **New Scan**:  Opens the Start window.
    - **Open**: opens a saved report
    - **Save**: saves the currently-displayed report as a ZIP file
    - **Exit**: closes the `System Information Collector`
- ▶ **Edit**
    - **Copy**: copies highlighted text to the clipboard
    - **Find**: opens a dialog to search the current report
- ▶ **View**
    - **Expand**: expands all nodes

- **Collapse**: closes all nodes
▶ **Help**
    - **About**: Information on the program version

With the exception of **Exit** and **About**, all options are available via the tool bar.

**TOOLBAR**

| Symbol | Description |
|---|---|
| **Home New Scan** | Opens the Start window. |
| **Open** | Opens a saved report. |
| **Save** | Saves the currently-displayed report as a ZIP file. |
| **Copy** | Copies highlighted text to the clipboard. |
| **Find** | Opens a dialog to search the current report |
| **Expand** | Expands all nodes. |
| **Collapse** | Closes all nodes. |

# 7.2 Collecting information

To collect information in an automated manner:

1. Start (on page 92) the **System Information Collector**

2. Select one of the four options by clicking on the corresponding button
    - **Full**: collects information about the system and zenon. Dump files are not collected
    - **System**: collects information about the system only
    - **Scada**: collects information about zenon, without dump files
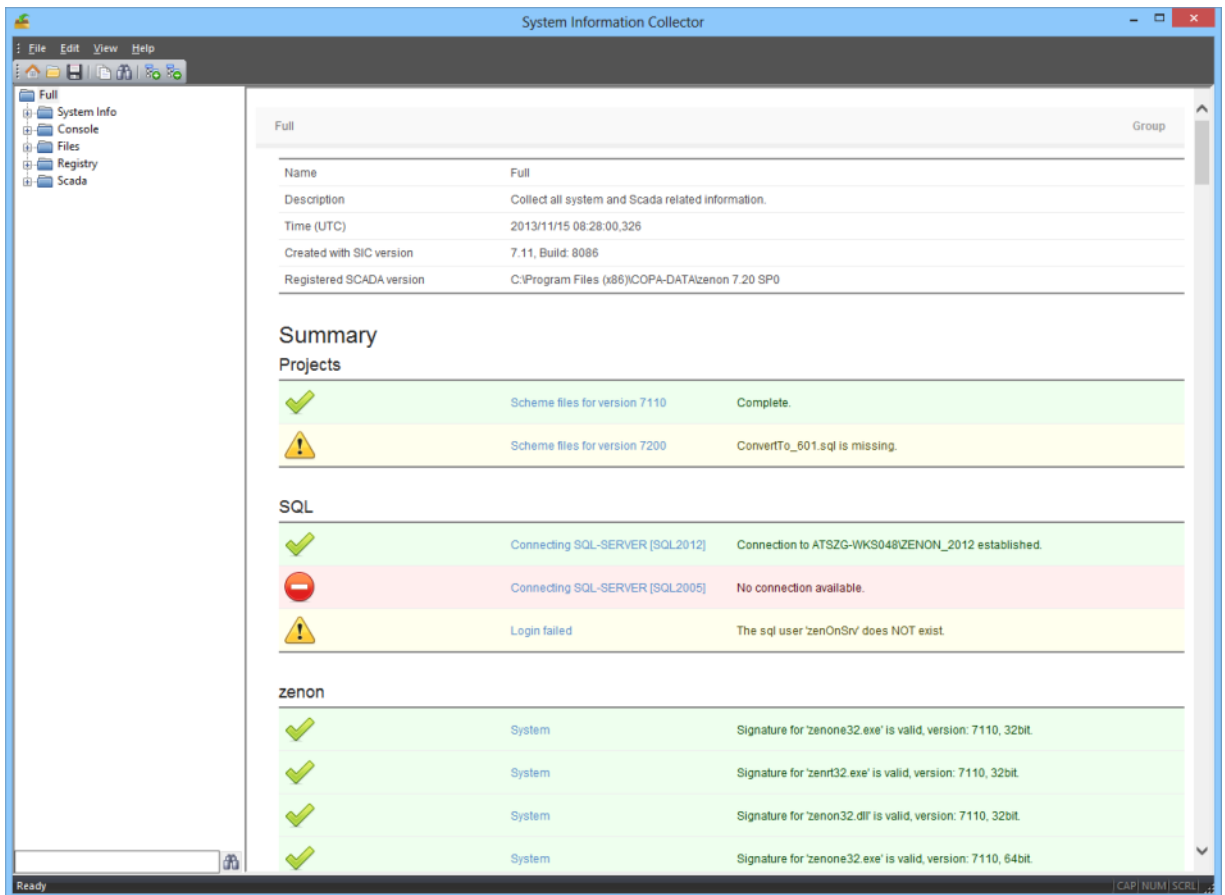
- **`Scada with dumpfiles`**: collects information about zenon and includes dump files
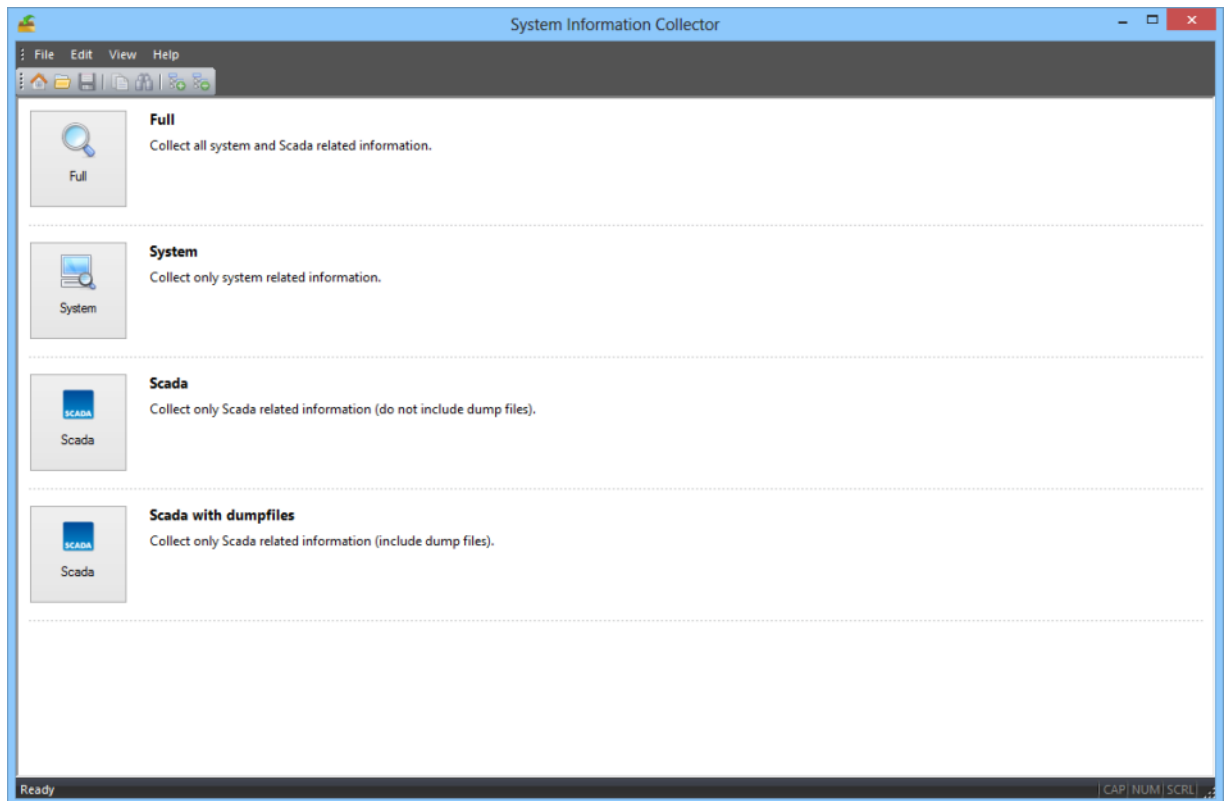
3. The **System Information Collector** creates a report with the desired information
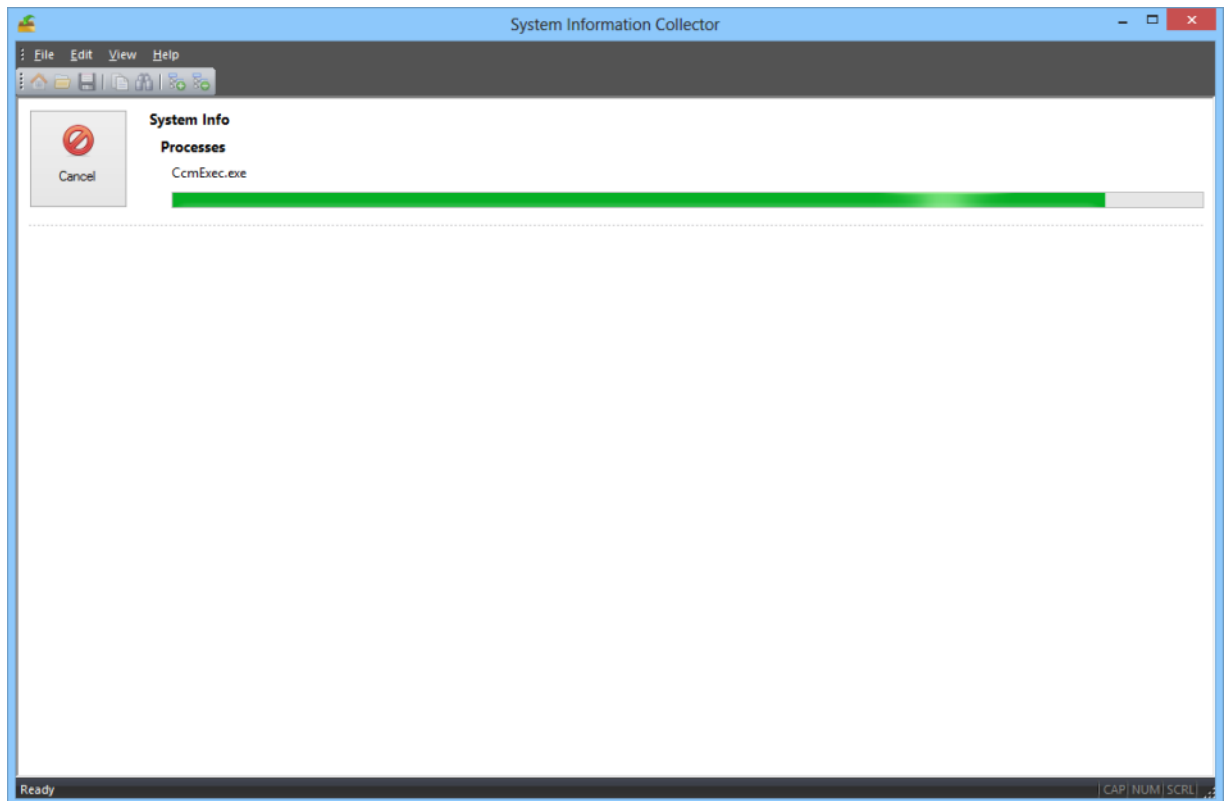
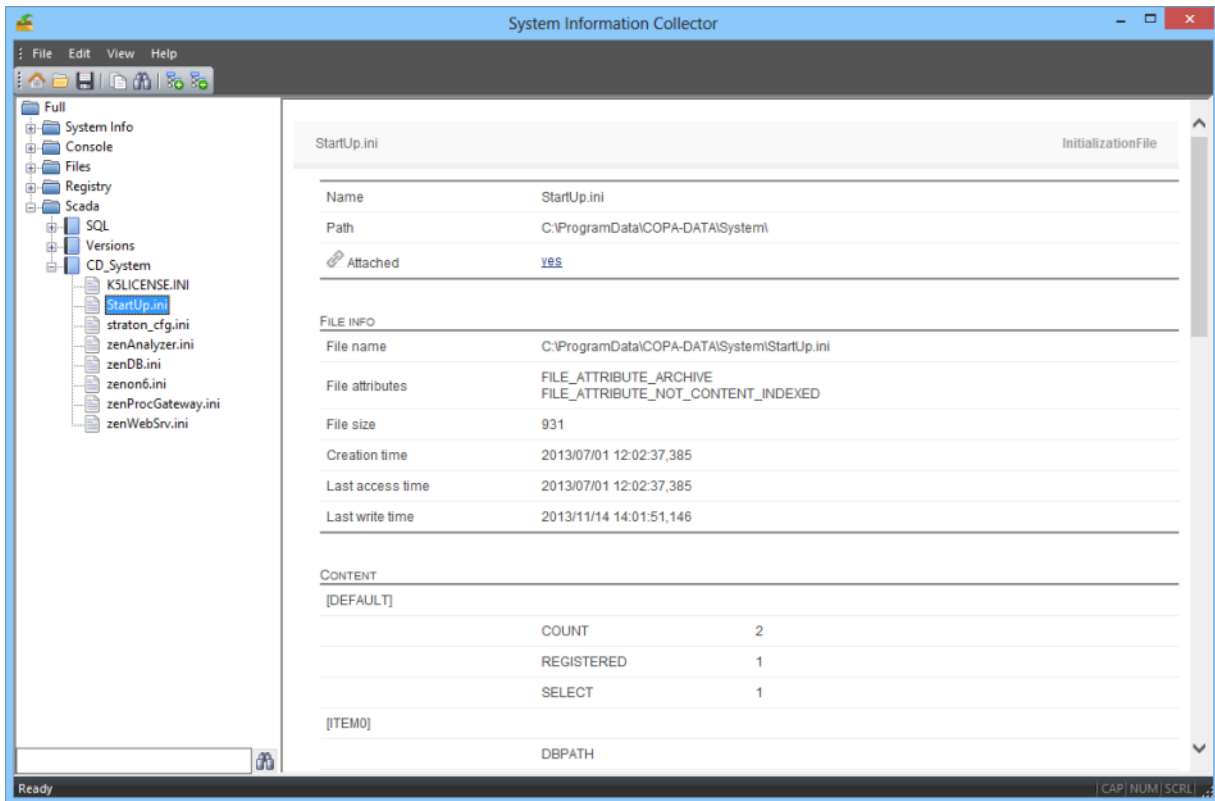4.  The completed report is displayed in the main window



## 7.3    Using the information

All information collected is displayed in the **System Information Collector**. They can:

▶   Save the report

▶   Navigate through the report and search for certain information

▸ Highlight selected information and copy it to the clipboard



## SAVING A REPORT

To save a report:

1. Click on the `Save` symbol or the `Save` command in the `File` menu

2. The dialog for voluntary entry of a password for the encryption of a report opens

3. the dialog for selecting a folder and file name is opened

4. The report is saved as a ZIP file

## OPEN REPORT

To open a saved report:

1. Click on the `Folder` symbol in the tool bar

2. Select the report

3. If you have entered a password for the encryption of the report when saving, enter it again now or jump the step by clicking on `OK`

4. The report is opened

**SAVING SELECTED INFORMATION**

To saved selected information only:

1. highlight the relevant information.

2. Click on the `Copy` symbol or the `Copy` command in the `Edit` menu

3. The selection is saved to the clipboard

4. Insert the content into a text file and save this

5. Repeat this process for further selected information

## 7.4    Forward report to COPA-DATA

The report can, depending on its size, be forwarded as an e--mail or uploaded to a defined save location to COPA-DATA. You can find out details on how you forward the report and which online save location you can use for this from your COPA-DATA Support contact.