COPA-DATA
do it your way

zenon manual

Tools

v.7.50

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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 7): Allows zenon LOG files to be read and configured.
- Keyblock Runtime Start (on page 49): Starts zenon Runtime and at the same time blocks all Windows system keys.
- Online updating of the zenon Help (on page 51): 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 62): 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 96): Reads system information and zenon information, displays it in an output window and saves it as a ZIP file.
- COPA-DATA PRP (on page 103): Allows the operation of a hardware-redundant zenon network via PRP communication.
  Note: PRP communication requires a valid zenon license on the computer.

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:

`%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 newly-created entries in real time
- customize the logging settings
- change the folder in which the LOG files are saved

Note:

1. The Diagnosis Viewer displays all entries in UTC (coordinated world time) and not in local time.
2. The Diagnosis Viewer does not display all columns of a LOG file per default. To display more columns activate property **Add all columns with entry** in the context menu of the column header.
3. If you only use **Error-Logging**, the problem description is in the column **Error text**. For other diagnosis level the description is in the column **General text**.
4. For communication problems many drivers also log error numbers which the PLC assigns to them. They are displayed in **Error text** or **Error code** or **Driver error parameter** (**1** and **2)**. Hints on the meaning of error codes can be found in the driver documentation and the protocol/PLC description.
5. At the end of your test set back the diagnosis level from **Debug** or **Deep Debug**. At **Debug** and **Deep Debug** there are a great deal of data for logging which are saved to the hard drive and which can influence your system performance. They are still logged even after you close the **Diagnosis Viewer**.

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

3.1 General

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

- Diagnosis Server (on page 22): local or defined in zenon6.ini defined **zenLogSrv**
- Diagnosis Clients (on page 26): all modules, drivers, services, etc. which write messages
- Diagnosis Viewer (on page 28): 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

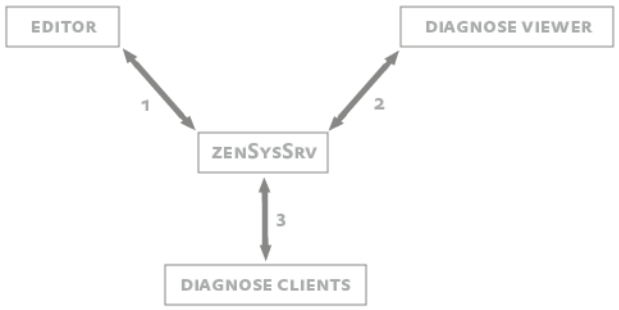
Service **zenLogSrv** buffers log entries until they can be written in the LOG file. If the memory consumptions increases continuously by **zenLogSrv**, it is an indicator that the LOG file cannot be written.

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.

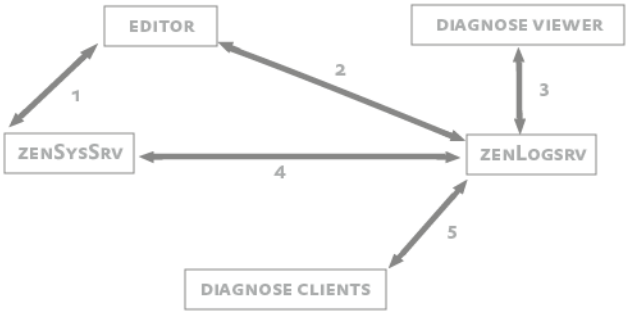
3. **zenSysSrv** sends the Diagnosis Client configuration to the Diagnosis Clients. The Diagnosis Clients send log entries to **zenSysSrv**.

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 **zenLogSrv**. **zenLogSrv** sends diagnosis data and the Diagnosis Client configuration to the Diagnosis Viewer.
4. The **zenSysSrv** sends LOG entries to **zenLogSrv**. The **zenLogSrv** sends the Diagnosis Client configuration to the **zenSysSrv**.
5. **zenLogSrv** sends the Diagnosis Client configuration to the Diagnosis Clients. The Diagnosis Clients send LOG entries to **zenLogSrv**.

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

EXAMPLE

IN an environment with a central Diagnosis Server the Runtime is started on a device. Based on the Runtime version the configuration is read from **zenon6.ini**. Versions before 7.00 SP0 read entry **LOG_CONFIG** from **[SYS_REMOTE]**, later versions read this entry from **[LOGGING_SYSTEM]**. This configuration is used to establish a diagnosis connection. (For details see Standard procedure (on page 12).) 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 45). 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 26).

You can also configure the behavior of the Server (on page 22).

CONFIGURATION

The configuration of the connection is done in zenon6.inI (on page 13) 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 28) also enables you to configure settings for the connection:

- Settings of the server (on page 23)
- Connection settings Diagnosis Server connection (on page 31)
- Diagnosis Client (on page 26)
- Diagnosis Viewer - Analysis Program (on page 28)

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

zenSysSrv and **zenLogSrv** are configured in zenon6.ini. At this it is differentiated between version 7.00 and up and versions 6.51 and earlier. With this you can configure old and new Diagnosis Clients and Diagnosis 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]` ▸ `DEVICE`: Sets the communication type used. `TCP/IP` and `serial` are available. ▸ `HOST`: is set to the computer name of the Diagnosis Server. ▸ `PORT`: states the port to be used. ▸ `TIMEOUT`: Provides the timeout time for the connection is seconds. ▸ `BAUD`: provides the connection speed of a serial connection. PC configuration: ▸ `DEVICE`=TCP/IP ▸ `HOST`=localhost ▸ `PORT`=1101 ▸ `TIMEOUT`=10 CE configuration: ▸ `DEVICE`=COM1 ▸ `BAUD`=115200
LOGMinFreeDiskSpace=	Defines minimum memory (in MB) that must be available on the hard drive. LOG files are deleted before this value is gone below. Default: `1024`
LOGMaxUsedDiskSpace=	Defines the maximum memory on the hard drive in MB used for LOG files. LOG files are deleted if this value is exceeded. Default: `1024`
LOGMinUsedDiskSpace=	Defines memory on the hard drive (in MB) that is used even if there are no LOG files.

	Default: 5
LOGLogLifeTime=	Defines the lifecycle of the LOG files in seconds. Older LOG files are deleted. Default: 1209600 (corresponds to 14 days)
LOGImageCnt=	Defines the number of LOG entries, after which all incremental LOG files are written. ▸ 0: inactive (default)
LOGLogUpdateTime=	Number of milliseconds, after which the LOG entries received are written to a LOG file. Default: 2000
LOGMaxBufferedRecs=	Defines the number of LOG entries that are buffered if they cannot be written to files. Default: 10240
LOGMaxLogFileSize=	Maximal size of a log file in bytes. If a log file reaches this size, it is closed and a new log file is created. Default: 5242880 (corresponds to 5 MB)
LOGCheckDiskTime=	Defines the interval in seconds, in which the memory occupied by LOG files is checked. Default: 60
INIT=	Action when starting the application with Windows CE: ▸ 0: end immediately ▸ 1 (or other value greater than 2): Open listening port in minimize to system tray ▸ 2: only display surface Default: 1 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. Contains parameters for the Diagnosis Server. Only affects **zenLogSrv** and has no effect on **zenSysSrv**.
LOGDirectory=	Defines the folder for the LOG files. If there is no entry, the following is used as a standard value: ▸ The path extracted from the Registry,

	for example: %ProgramData%\COPA-DATA\LOG ▸ the LOG folder in the ProgramData folder of the zenLogSrv, if no path is defined in the registry, e. g. `%ProgramData%\COPA-DATA\zenon700\LOG`

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

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

DIAGNOSIS CLIENT BEFORE VERSION 7.00 SP0:

INI entry	Description
[SYS_REMOTE]	Section in zenon6.ini. 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] ▸ DEVICE: Sets the communication type used and must always be set to TCP/IP ▸ HOST: is set to the computer name of the Diagnosis Server. ▸ PORT: states the port to be used. ▸ TIMEOUT: Provides the timeout time for the connection is seconds. Configuration: ▸ DEVICE=TCP/IP ▸ HOST=localhost ▸ PORT=1101 ▸ TIMEOUT=10

DIAGNOSIS CLIENT FROM VERSION 7.00 SP0

INI entry	Description
[LOGGING_SYSTEM]	Section in zenon6.ini. 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] ▸ DEVICE: Sets the communication type used and must always be set to TCP/IP ▸ HOST: is set to the computer name of the Diagnosis Server. ▸ PORT: states the port to be used. ▸ TIMEOUT: Provides the timeout time for the connection is seconds. Configuration: ▸ DEVICE=TCP/IP ▸ HOST=localhost ▸ PORT=50780 ▸ TIMEOUT=10

NOTE:

INIT UNDER CE

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

Reason: The value 2 means that both **SysSrvCE** and **LogSrvCE** only display the user interface and do not open the listening port.
If now a Diagnosis Client wants to establish a connection, it will fail. As in this case the Diagnosis 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]** 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.

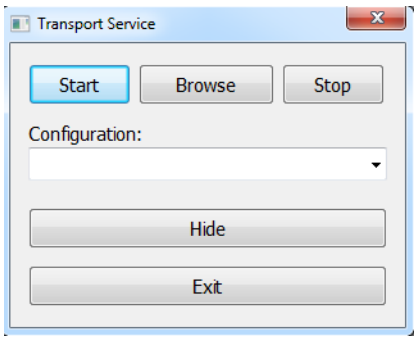
At the configuration (on page 13) of the connection consider the recommendation for parameter **INIT**:

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.

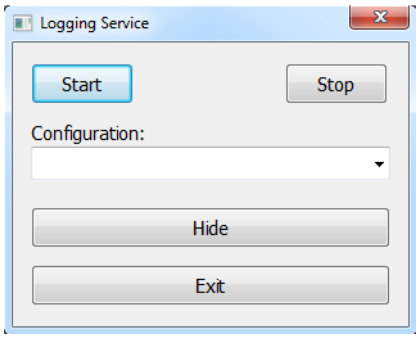
USER INTERFACE UNDER CE

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 13) for the configuration of the connection. Available are: ▸ Configuration from zenon6.ini ▸ Standard configuration for TCP/IP ▸ 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 (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 13) for the configuration of the connection. Available are: ▸ Configuration from zenon6.ini ▸ 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 (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 13).
- 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 13).

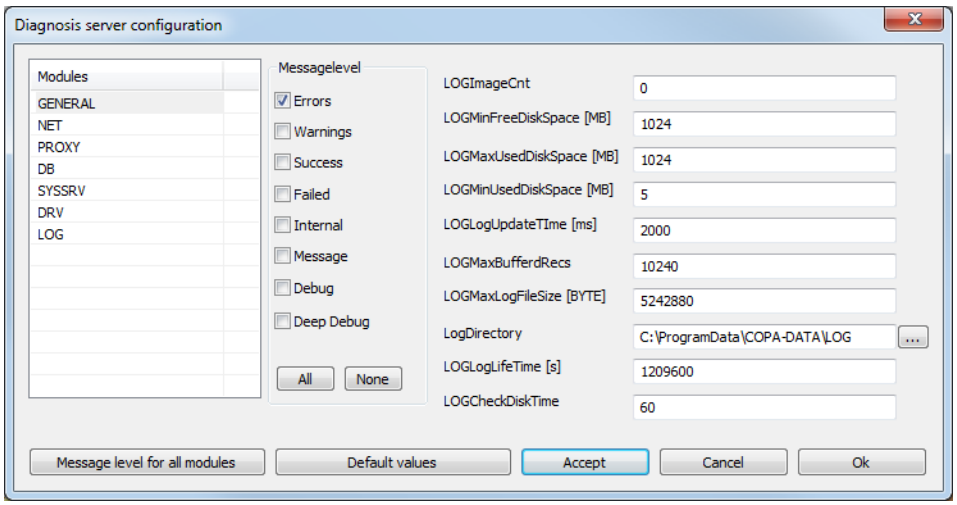
CONFIGURATION VIA DIALOG

To configure the Diagnosis Server via the dialog:

1. start the Diagnosis Viewer
2. open entry File Connect to... (on page 31).
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. Default: **Errors**
LOGImageCnt	Number of records, after which all incremental fields will be written. Default: 0 (not active)
LOGMinFreeDiskSpace	It is continuously checked, if less than the configured minimal free disk space is available. The oldest log files are deleted. Minimal free disk space in MB, before log files are deleted. Default: 1024 MB
LOGMaxUsedDiskSpace	Maximal used disk space for the log in MB. Default: 1024 MB
LOGMinUsedDiskSpace	Minimal used disk space in MB independent whether LOGMinFreeDiskSpace is under-run. Default: 5 MB
LOGLogUpdateTime	Time in ms, after which the received entries are saved. Default: 2000 ms
LOGMaxBufferedRecs	The server buffers the contents of all incremental log fields for diverse applications, in order to be able to write images of them into the log file. With the start of a log file and after configurable number of log entries a complete image for all addresses is written into the log file. Received data are written to the log files. The entry is done via temporary buffer. It can be configured whether the data should be written immediately or delayed. Number of buffered entries if they cannot be saved. Default: 10240
LOGMaxLogFileSize	The server writes the received log data into the log file. If this log file reaches the configured size, a new file is started. Maximal size of a single log file in bytes. Default: 5 MB
LOGDirectory	Folder in which the log files are written. Default: %ProgramData%\COPA-DATA\LOG\
LOGLogLifeTime	It is continuously checked, if the lifetime of the log files is exceeded. The oldest log files are deleted. Number of seconds to keep the log files. Default: 14 days
LOGCheckDiskTime	Time in sec, in which the used disk space id checked. Default: 60 s
Message level for all modules	Settings are taken over for all modules.
Default values	Restore default settings.
Accept	Take over settings for this module.

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

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 13) 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**.

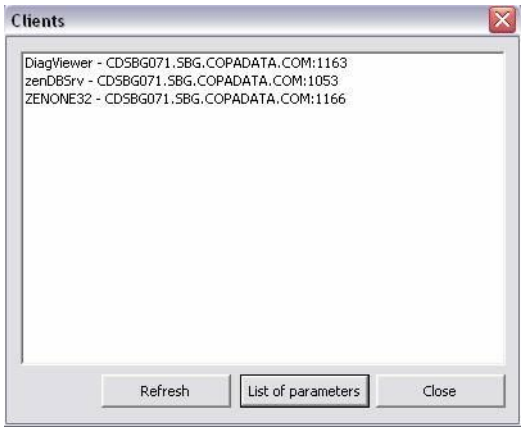
The settings are configured via entry **LOG_CONFIG=** in section `[SYS_REMOTE]` (up to 6.51) or **[LOGGING_SYSTEM]** (from 7.00).

CONFIGURATION DIAGNOSIS CLIENT

To configure the Diagnosis Client via the dialog:

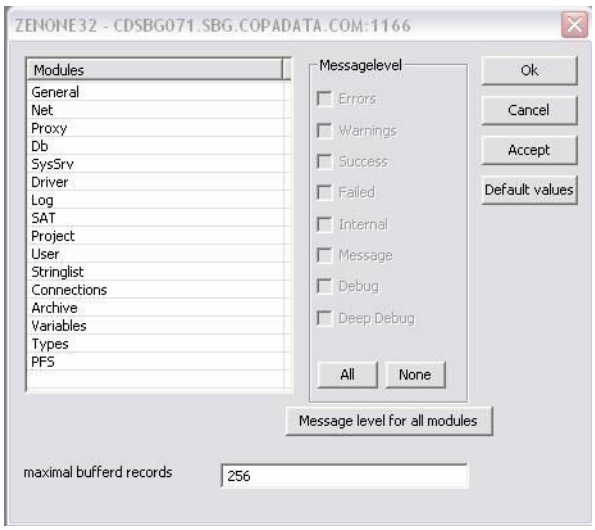
1. start the Diagnosis Viewer
2. open entry **Settings** -> **Client configuration**
   (only available if logging is inactive)
3. highlight a Client
4. Click on **List of parameters**
5. The dialog for configuration is opened
6. configure the Client
7. Close the dialog by clicking on **OK**.
8. repeat 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 from **ZenDbSrv** ▸ **SysSrv**: Messages from **ZenSysSrv** ▸ **Driver**: Messages from a driver ▸ **LOG**: Messages from logging ▸ **SAT**: SICAM 230 specific messages
Messagelevel	Type of information which should be logged.
All	Selects all.
None	Deselects all.
Message Level for all Modules	Assigns highlighted message levels to all modules.
Max Buffered records	Number of records to be buffered if no connection to the server is established. 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.

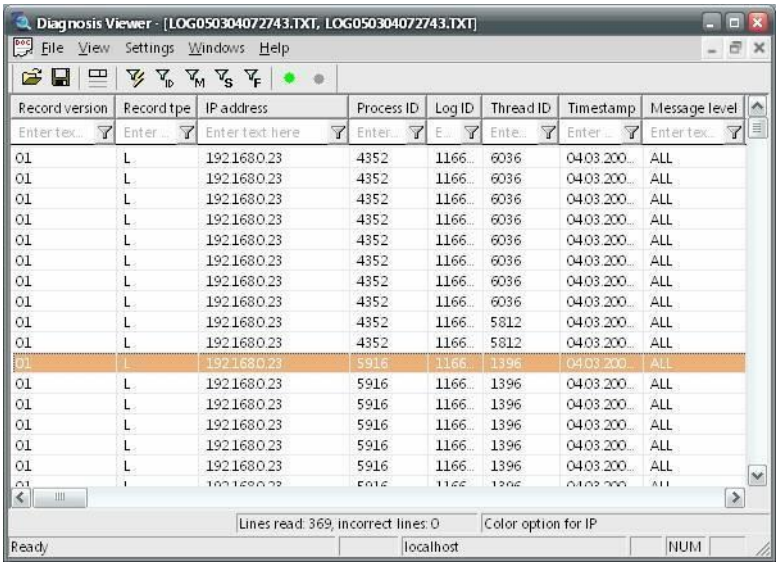
3.6 Diagnosis Viewer - Analysis Program

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

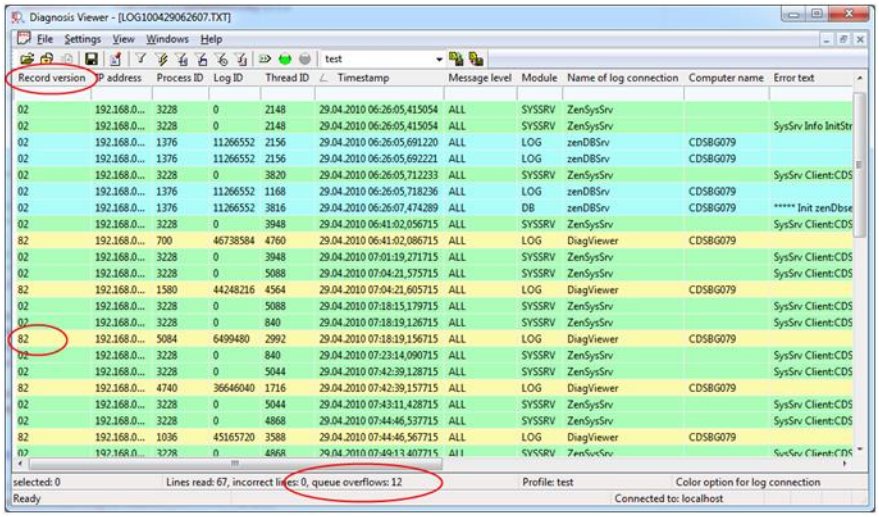
4. the log file is displayed



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 38) 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.

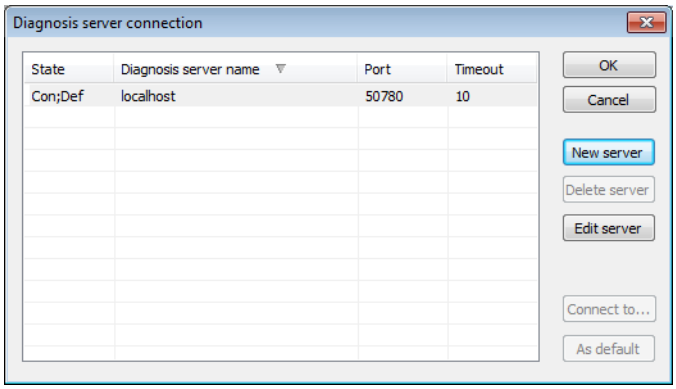
Parameters	Description
File	Commands in menu File.
Open	Opens dialog for selecting a log file saved in TXT format. Each newly opened log file is displayed in its own window.
Open to active document	Each new log file is added to the active window.
Close	Closes the active window.
Save	Saves the log files 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 23).
Online	Activates the online error view. If online logging is started, all incoming entries are displayed. The same filter dialog as for reading files can also be set here. Difference: If no log connection is selected, all incoming log entries will be displayed, otherwise only the ones from the selected clients. If the filter of the log connection is modified, all entries not fulfilling the filter criteria will be lost. (Logging file nevertheless is created and all entries are saved.) Displayed entries can be saved.
Offline	Deactivates the online error view. (Default)
Exit	Closes the Diagnosis Viewer.

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 13) (recommended).

SELECT DIAGNOSIS SERVER

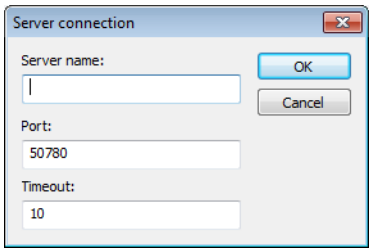
Click on **File -> Connect to...** to open the dialog to select a server:



Parameters	Description
List Server	Lists all configured Servers and displays them: ▸ Status ▸ Name ▸ Port ▸ Timeout
OK	Applies settings and closes the dialog.
Cancel	Discards settings and closes the dialog.
New Server	Opens the dialog for configuring a new Server.
Delete Server	Selected Server entry is deleted from the list.
Edit Server	Opens the dialog for configuring the selected Server.
Connect to	Establishes a connection to the selected Server.
As default	Selected server becomes the standard server.

CREATE AND EDIT DIAGNOSIS SERVER

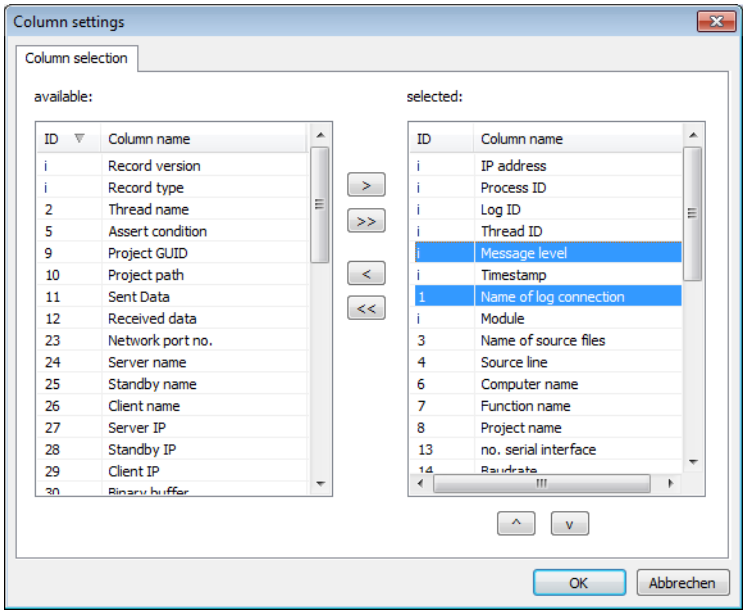
Click on **New Server** or **Edit Server** in dialog Diagnosis Server connection to open the dialog for configuring the Server:



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

You can select the columns that are to be displayed in the menu under **Settings -> Column settings**. The selection is only applicable for the time period in which the file is opened. Column settings can however be saved as profiles.



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

Columns can also be configured via the context menu:

Parameters	Description
Add all columns with 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

Profiles

Column settings can be saved as profiles.

To save profiles:

1. Enter a name into the filed in the toolbar.
2. Click on the symbol with the disk.

To load profiles:

1. Select a saved profile from the drop-down list.
2. Click on the symbol with the disk.

The profiles are saved as a ***.lvs** file.

3.7 Possibilities of Filtering

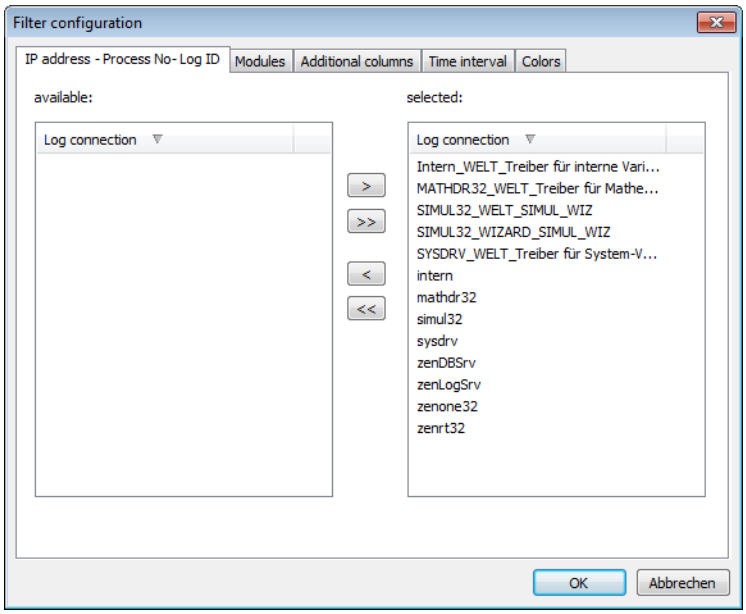
To define filters open the corresponding filter dialog via the corresponding symbol or the tab of the filter.

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 37).**
3	**Change pre-filter for modules**	Opens tab **Modules** (on page 38).
4	**Change pre-filter for additional columns**	Opens tab **Additional columns** (on page 39).
5	**Change pre-filter for time interval**	Opens tab **Time interval** (on page 40).
6	**Change pre-filter for coloring**	Opens tab Colors (on page 41).

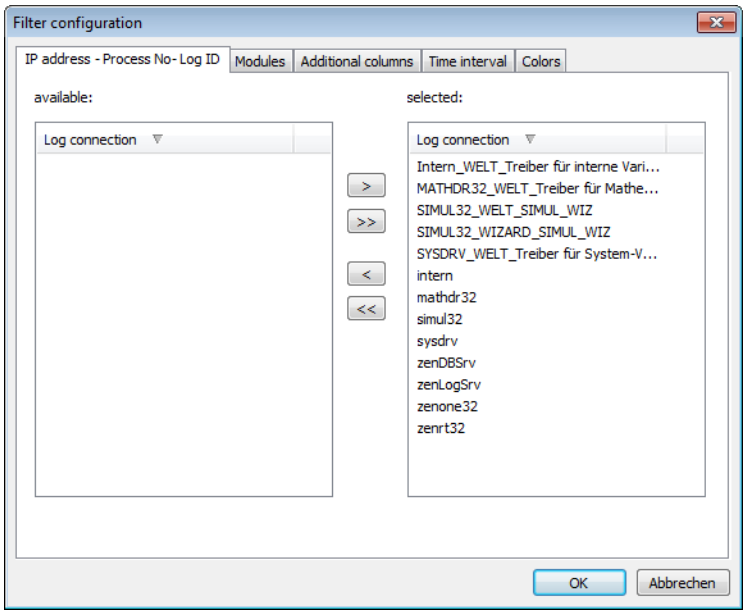
FILTER DIALOG



Tabs	Description
IP-ProcessID-LogID	Opens tab **IP address - Process No - Log ID** (on page 37) for configuring the connection which should be logged.
Modules	Opens tab **Modules** (on page 38) for the modules which should be logged.
Additional columns	Opens tab **Additional columns** (on page 39) for selecting additional columns which should be displayed.
Time interval	Opens tab **Time interval** (on page 40) for defining time filter.
Colors	Opens tab Colors (on page 41) for selecting the color-coding of information.

3.7.1 IP address - Process No - Log ID

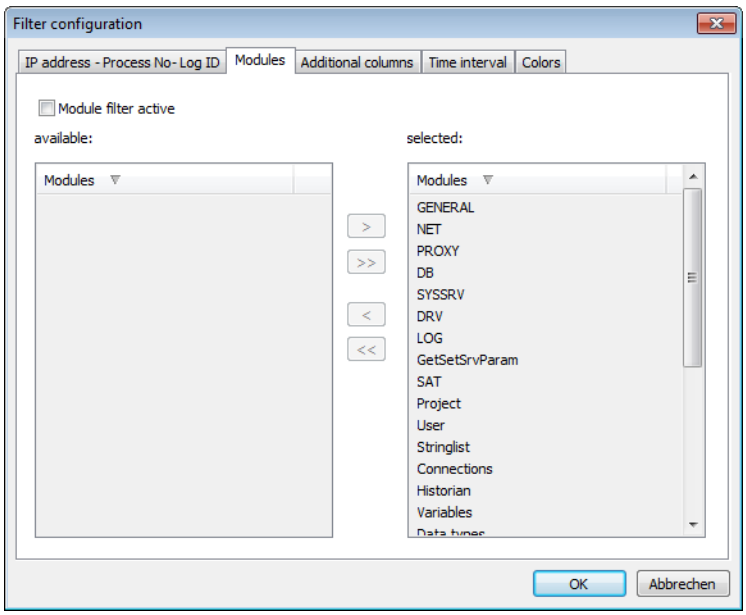
Configuration of the connections and processes which should be displayed.



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

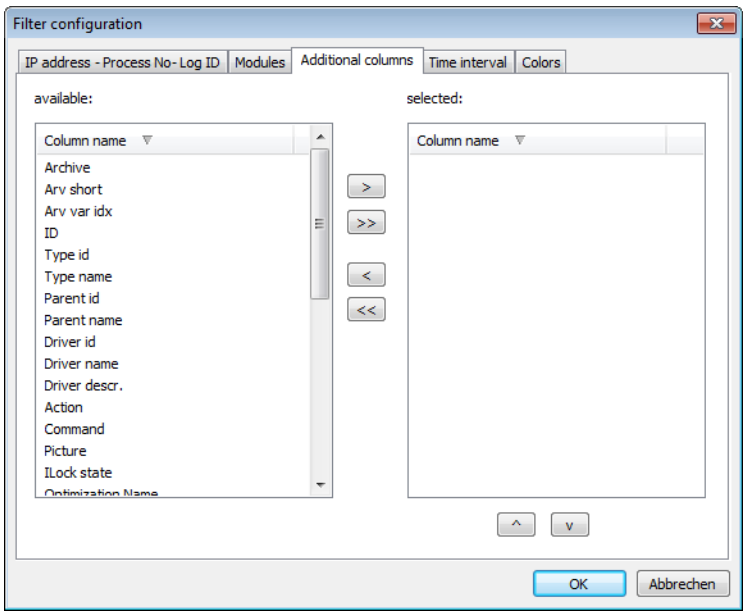
Selection of the modules which should be displayed.



Parameters	Description
Module filter active	`Active:` It is filtered on modules. 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

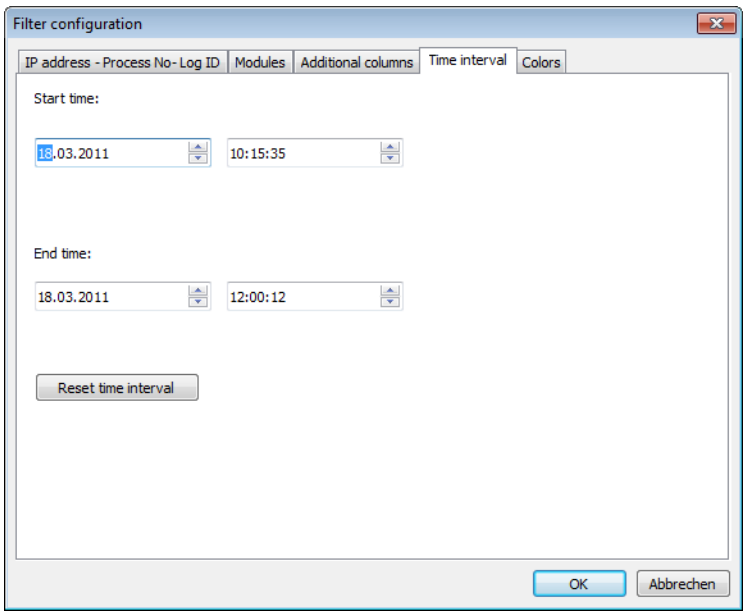
Selection of the columns which should be displayed additionally.



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

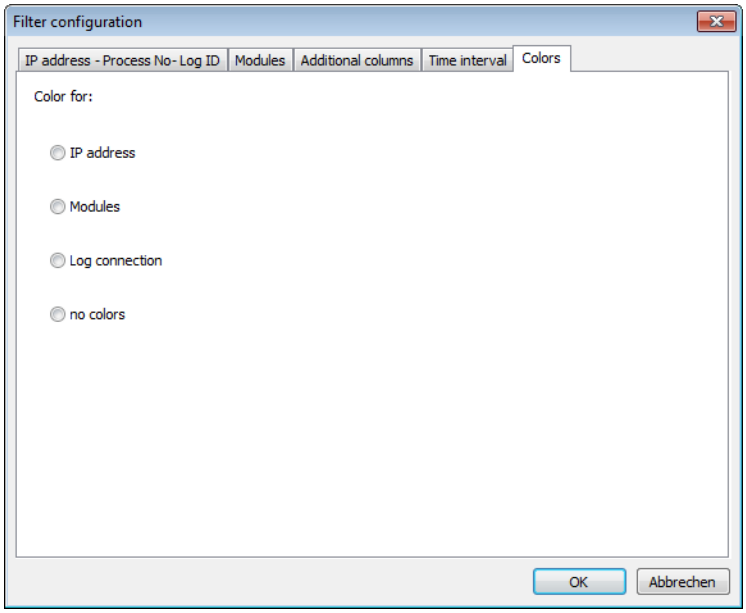
Configuration of the time filter for displaying the entries.



Parameters	Description
Start time:	Selection of the date and point in time from which entries should be displayed. Default: actual date
End time:	Selection of the date and point in time up to which entries should be displayed. 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 35) 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. These fields identify the clients and allow the message to be assigned.
i	Log ID	entry ID These fields identify the clients and allow the message to be assigned.
i	Message Level	Name of the message level for which the message was entered.
i	Module	Name of the module, which entered the message.
i	Process ID	ID of the project. These fields identify the clients and allow the message to be assigned.
i	Record type	Type of entry.
i	Record version	Version number of the entry.
i	Thread ID	ID of the thread, from which the message was entered.
i	Timestamp	Time of the message in UTC.

OPTIONAL FIELDS WITH FIX ID.

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

3.10 Handling of errors and messages for the Diagnosis Viewer

ERROR

Error	Possible causes
The port cannot be opened.	▸ Another application uses the port. Check via "netstat". ▸ The ports for entries **[SYS_REMOTE] CONFIG** and **[LOGGING_SYSTEM] CONFIG** are identical. **zenLogSrv** and **zenSysSrv** then try to open the same port.
Diagnosis Clients do not start the zenLogSrv.	▸ **zenAdminSrv** was ended. Without it the service cannot be started. ▸ **zenLogSrv** is not registered as a service at the PC. In this case enter the following in the command line: **zenLogSrv.exe –Service** ▸ Diagnosis Clients are not of version 7.00 SP0 or higher. The **zenLogSrv** is only supported from this version on. ▸ Under Windows CE: The individual components (Runtime, **SysSrvCE**, **LogSrvCE**) are located in different folders. They must be located in the same folder. Otherwise the components do not find one another.
Under CE many processes are created by SysSrvCE.exe or LogSrvCE.exe.	▸ One of the two entries in zenon6.ini **[SYS_REMOTE] INIT** or **[LOGGING_SYSTEM] INIT** has the value 2. As a result the application only displays the user interface and does not open the Listening port. Each Diagnosis Client then tries to start the process as it cannot connect to the Diagnosis Server.
Several processes crash. (Unhandled Exceptions of the Diagnosis Server at receiving log messages or configuration commands or of the Diagnosis Client and Diagnosis Viewer during booting or during receiving the configuration)	▸ The versions do not match. Diagnosis Clients, Diagnosis Server and Diagnosis Viewer must either all have version 7.00 SP0 or higher or all version 6.51 SP0 or earlier (see Compatibility (on page 8)).

LOG ENTRIES

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

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

- **SysSrv**: **zenSysSrv**
- **SysCli**: Client for **zenSysSrv**
- **LogSrv**: **zenLogSrv**
- **LogCli**: Diagnosis Client

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

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. Keyboard 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 51) chapter**.**

Note: The blocking of the **Windows** key can be circumvented. You should therefore block the **Windows** key using the corresponding entry in the **Startup Tool** (on page 67)

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 is opened and automatically starts 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` (except **Windows + L**)

     Notes:
     When locking the system keys, the normal operation of the scroll bars with the mouse in the Runtime is also blocked. This block can be circumvented with the context menu.
     If the system is blocked using the keyboard shortcut **Windows + L**, All **Windows** keyboard

shortcuts are available again when signing in again. To prevent this, in the **Startup Tool** (on page 67) under **Application -> Options -> General**, deactivate the **Windows** key.

- Hiding the Control Panel in the start menu
- Locking the toolbar 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, then note the following:*
>
> - The Autostart folder is user specific:
>   If another user logs in, the program is not executed.
> - Execution of the Autostart 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 is to be operable without these limitations, Runtime must be started without the **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.*
>
> - It can only be ended by shutting the computer down using the hardware
> - All system keys also remain blocked after restarting
>
> *In order to make system keys accessible again after not being shut down properly (in the event of a power cut for example):*
>
> - 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 49)
   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)

Access to the zenon file system is thus restricted.

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

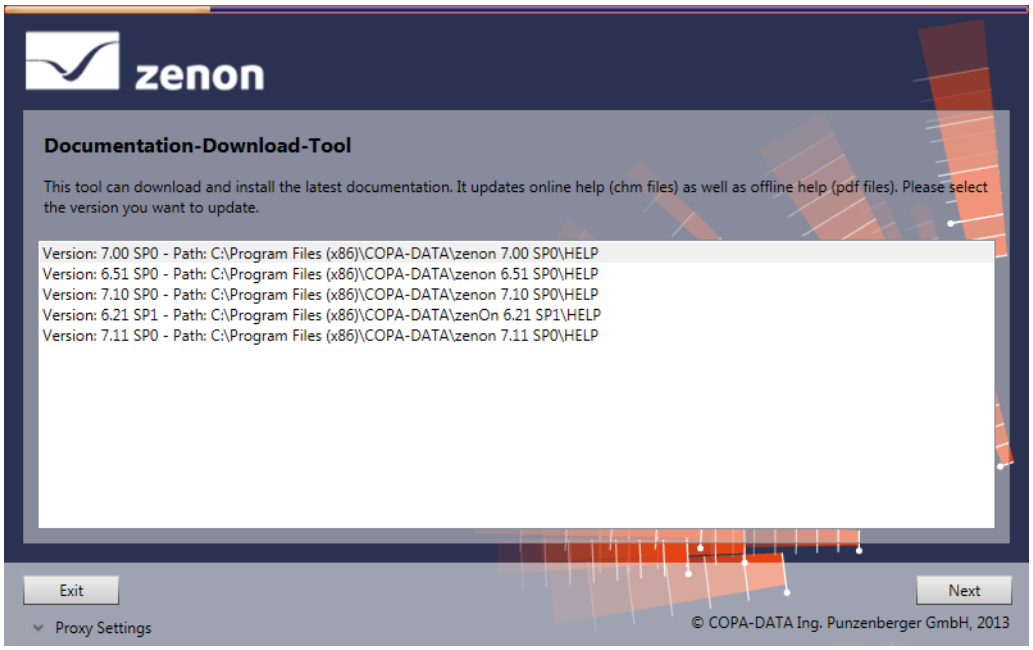
The **Documentation Download Tool** is automatically installed with zenon.

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

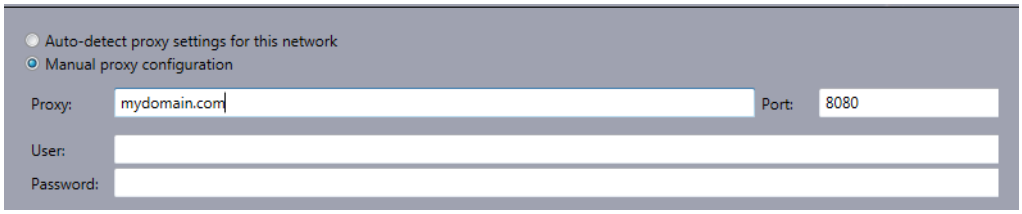
It is possible to navigate through the individual dialogs by means of the navigation bar in the lower area of the dialog:

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 54). 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.

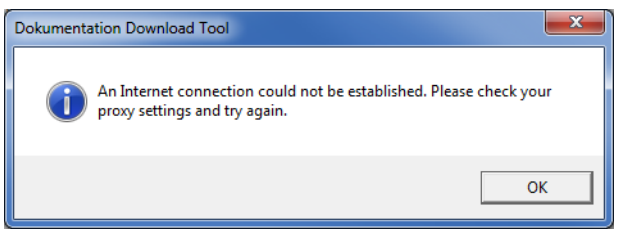


Parameters	Description
Auto-detect proxy settings for this network	The proxy settings of your system are used for communication with the internet. (Default: active)
Manual proxy configuration	Enables the proxy settings to be configured.
`Proxy:`	Address of the proxy server
`Port:`	Port of the proxy server (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

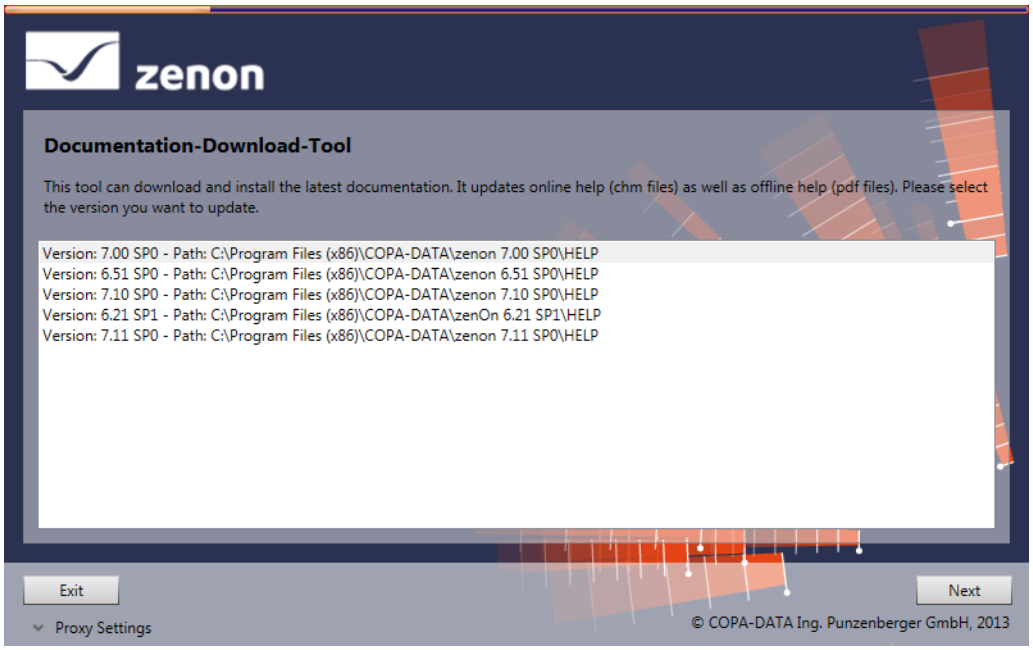


An error dialog appears with incorrect entries.

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

5.5 Selection of version

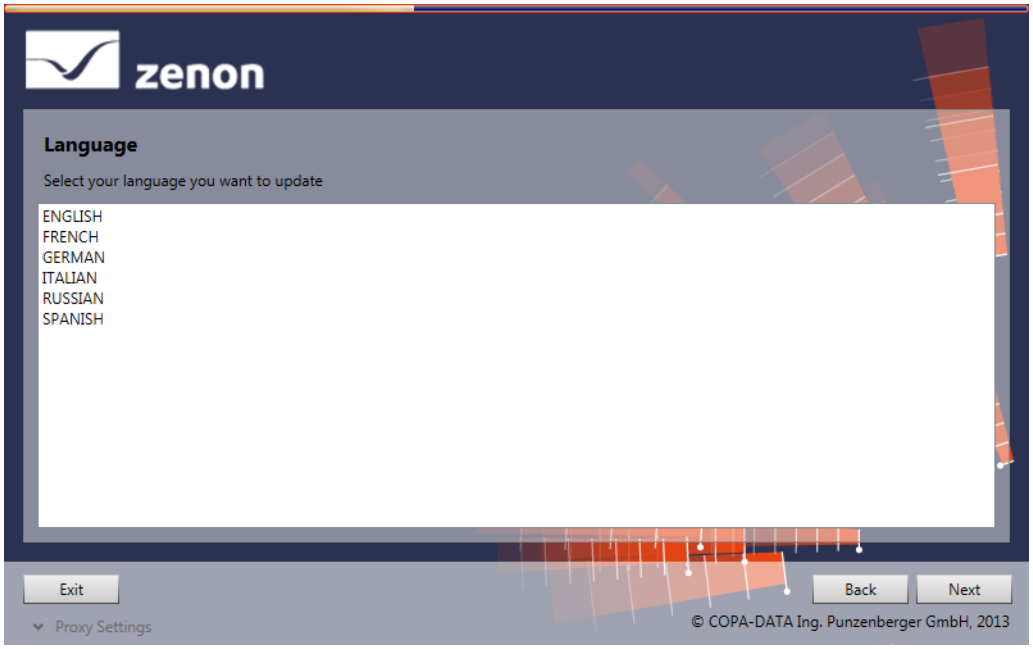
In this dialog, select the version of zenon to be updated.



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

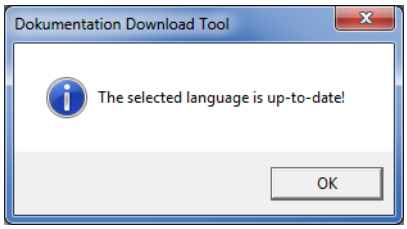
In this dialog, you select the zenon language to be updated.



Parameters	Description
List of available languages	Lists the languages available for zenon: ▸ English (ENGLISH) ▸ French (FRENCH) ▸ German (GERMAN) ▸ Italian (ITALIAN) ▸ Russian (RUSSIAN) ▸ Spanish (SPANISH) Select the language to be updated by clicking on it. 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.

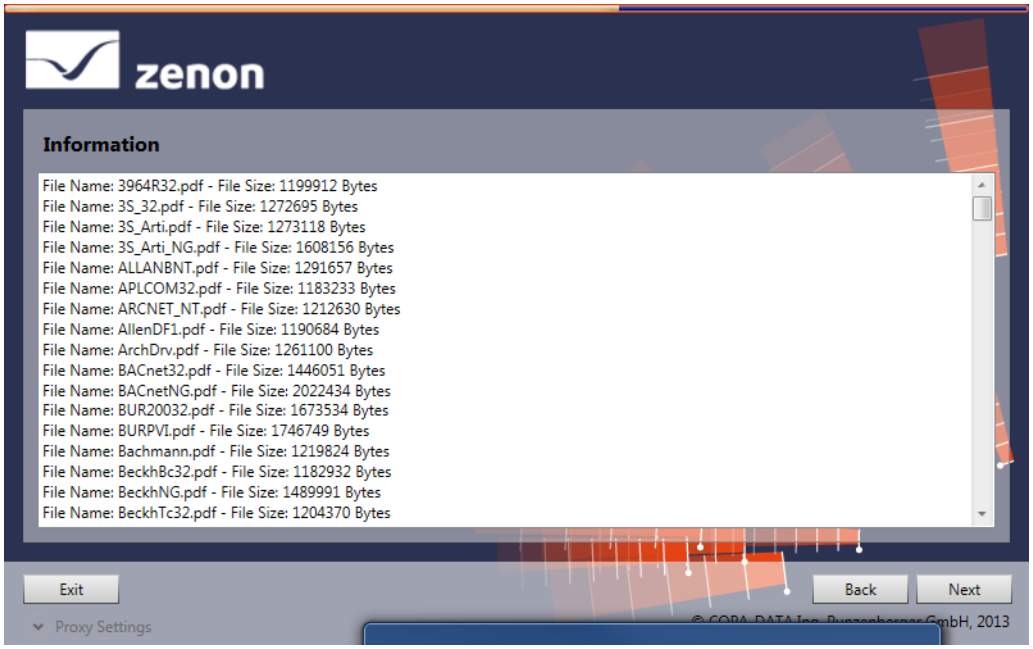
5.6.2 Language-dependent content of zenon help

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

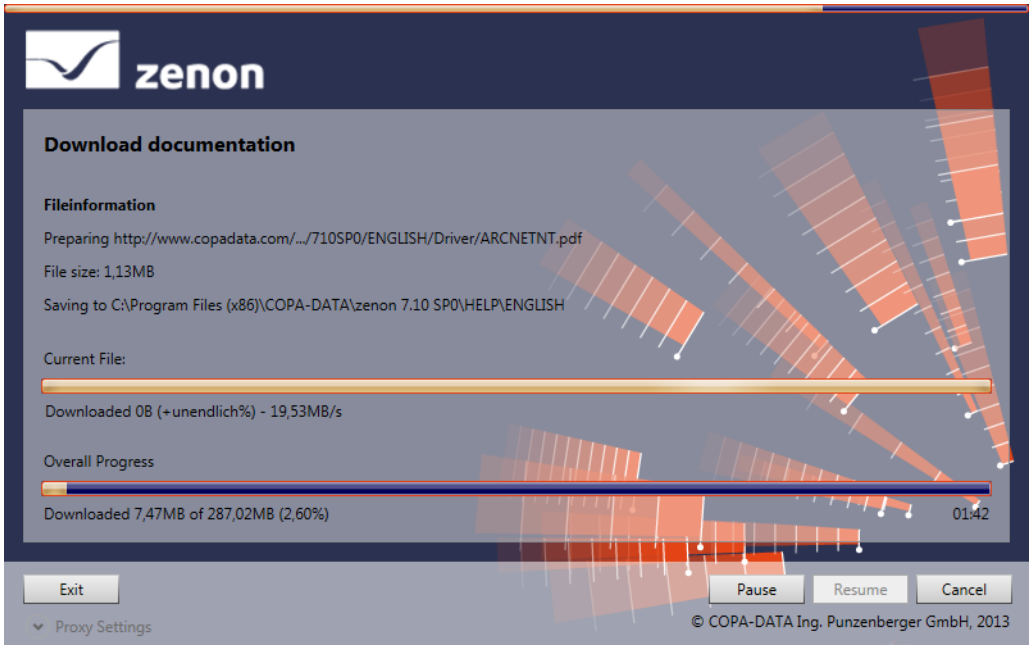
Once the update conditions have been selected, a dialog with the available updates is displayed:



Parameters	Description
List of available Updates.	List of the documents that are available for the selected version of zenon. 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 or online help file to be updated.



Parameters	Description
Fileinformation	Detailed information on the file that is currently being downloaded: ▸ File origin ▸ File size ▸ 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 ▸ Closes the **Documentation Download Tool**
Pause	Pauses the current download
Resume	Resumes the download that was paused (by clicking on **Pause**). 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.

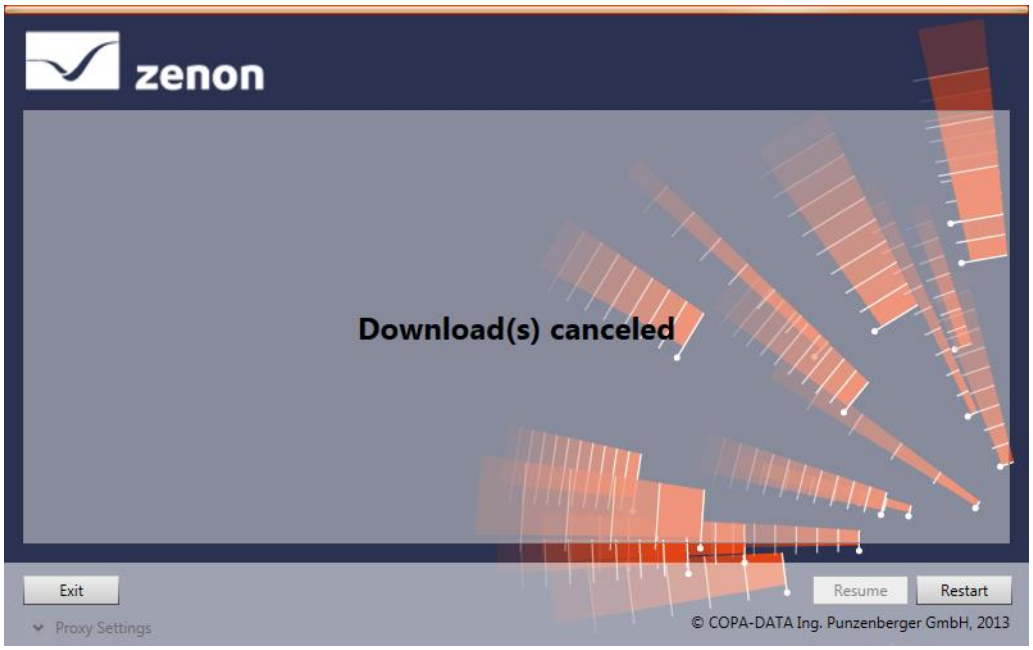
5.8.1 Download complete

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 52) 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 52) 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

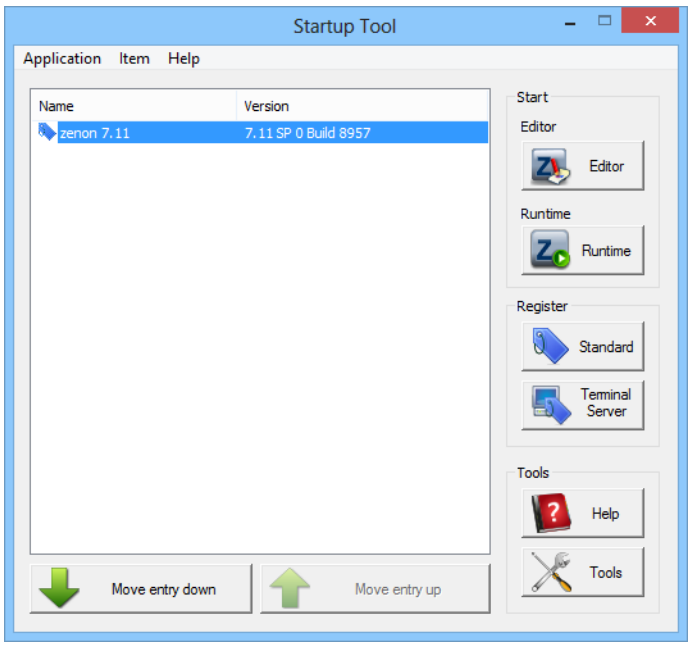
> **License information**
>
> *Part of the standard license of the Editor and Runtime.*

> **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**.*

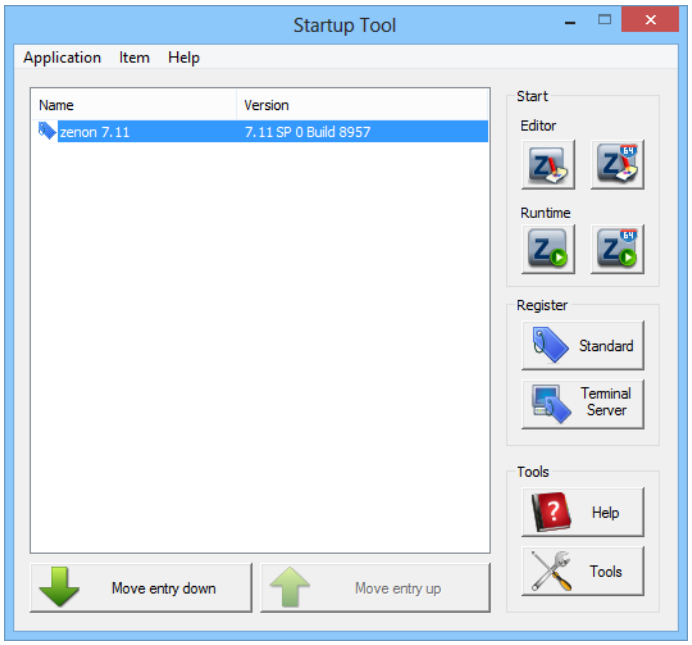
6.1 Start dialog

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 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 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. ▸ **Standard**: Registers zenon. **ZenSysSrv** is registered as a process. ▸ **Terminal Server**: Registers zenon for use with a terminal server. Procedures: **ZenDBSrv** is deregistered and no longer re-registered and also not started. **ZenSysSrv** is registered as a service. The entries in **zenon6.ini** are amended for use on the terminal server. If, in an entry, there are no parameters (on page 81) stored for **workspace** 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 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 or 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

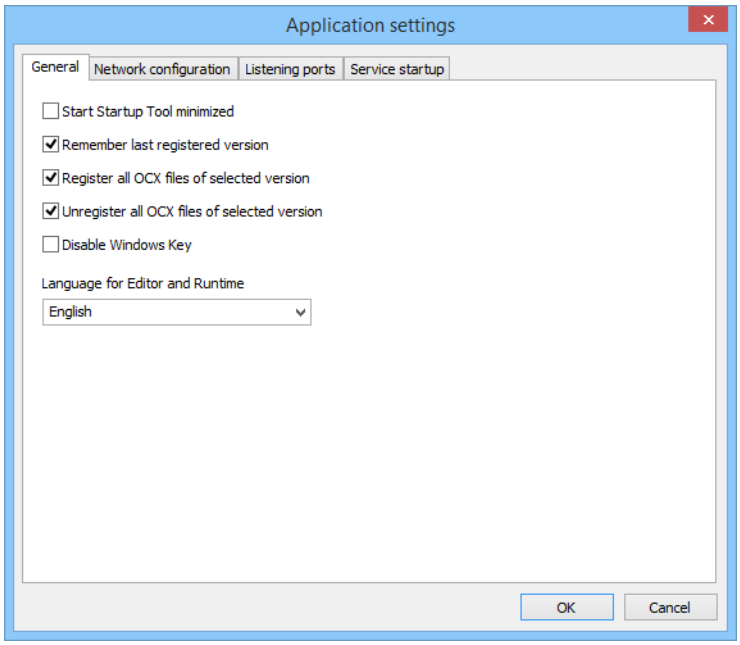
Entry	Function
Options	Opens the dialog for configuring the settings.
Exit	Closes the Startup Tool.

OPTIONS

- The **Options** entry in the **Application** menu opens the dialog to configure the properties for:
- General (on page 67): general settings
- Network configuration (on page 69): Configuration of the network and the strong encryption of network communication
- Listening ports (on page 72): Configuration of the listening ports
- Service startup: Start programs as a service

General

General settings:



Note: This dialog is only available in English.

The buttons are displayed in the system language of the computer.

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. The context menu offers all possible actions from the Start dialog (on page 63) 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. This option makes sure that there are always appropriate ActiveX controls for each version (default). Attention: It has no influence on the registration of ActiveX controls and COM servers which are listed in the individual settings (on page 88) of the respective version.	registers only the pre-set components. This option accelerates the registration process and is appropriate for all projects which do not use ActiveX.
Disable Windows Key	The **Windows** key is blocked on the keyboard and is not functional. Changes only take effect after the system has been restarted.	The **Windows** key is available. Changes only take effect after the system has been restarted.
Language for Editor or Runtime	Starts Editor or Runtime with the language selected in the selection list. Makes sure that zenon always uses the defined language when started from the Startup Tool. Has no influence if **>CD_PRODUCTNAME<.exe** is started directly.	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).

BEHAVIOR OF THE DISABLE WINDOWS KEY OPTION

The **Disable Windows Key** option behaves as follows:

Set block

- Initial situation: The option is not set.
- Action: The option is activated.

- Result:
  - The system must be restarted.
  - The **Windows** key is deactivated. **Windows** keyboard shortcuts are blocked.

Undo block

- Initial situation: The option is not set.
- Action: The option is deactivated.
- Result:
  - The system must be restarted.
  - The **Windows** key is available. The block of the **Windows** key combinations is released.

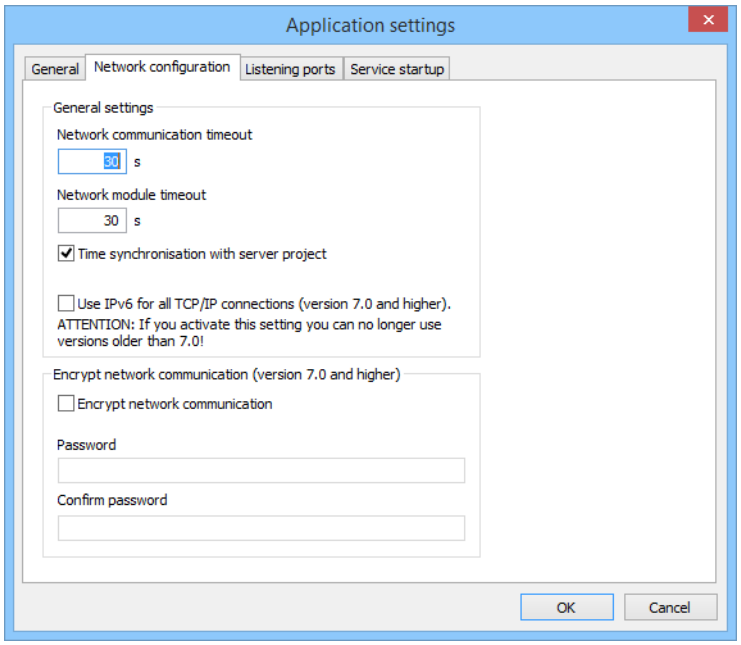
Network configuration

The following applies for zenon from version 7 onwards:

- you can use IPv6
- you can encrypt the transfer in the network.

This dialog configures:

- Timeouts
- the use of TCP/IP via IPv4 or IPv6
- the serious encryption of the network communication at the local computer



Note: This dialog is only available in English.

The buttons are displayed in the system language of the computer.

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	Timeout for network communication in seconds. Default = `30` Equals entry **NET_TIMEOUT_MSEC**= in file **zenon6.ini**.
Network module timeout	Timeout for module communication in seconds. Is not used for spontaneous module request on the client or standby. If no response comes from the server in the set time, the action is canceled. Default = `30` Examples: Call up of archive data for Extended Trend, recipe administration, password list...) 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 90).

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

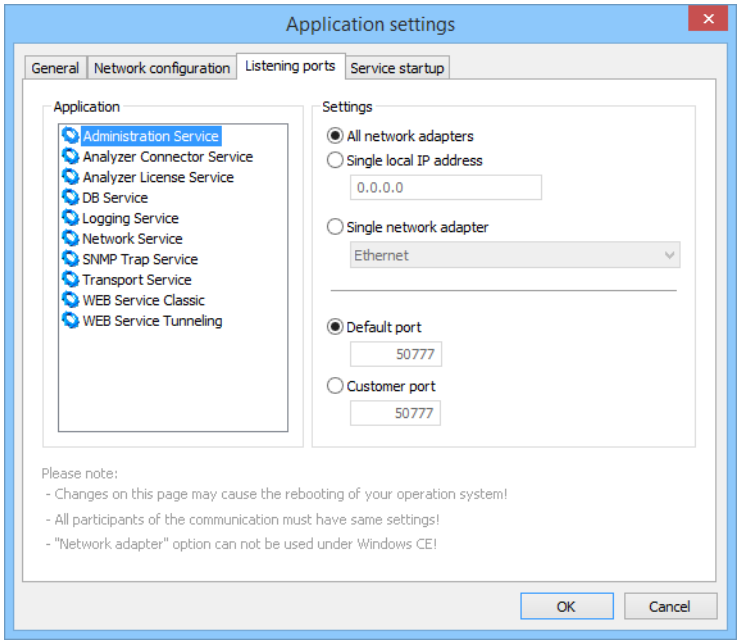
In this tab, the ports that are used by zenon can be individually configured for individual applications. The settings that were saved in the respective **zenon6.ini** file are used in Runtime.

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



Note: This dialog is only available in English.

The buttons are displayed in the system language of the computer.

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: ▸ IPv4 ▸ 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.

DEFAULT PORTS

Assignment of the standard ports to applications:

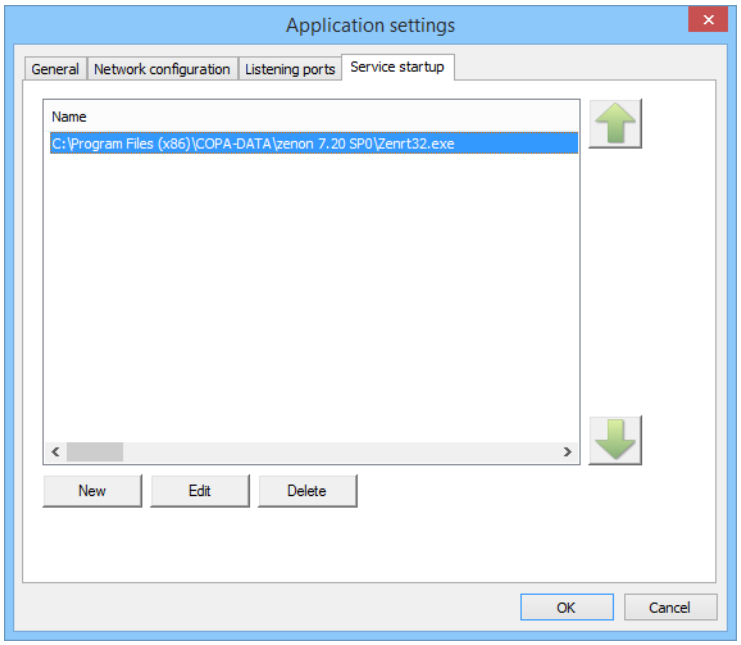
Application	Standard port
zenon	
Network Service	1100
Transport Service	1101
WEB Service Classic	1102
DB Service	1103
SQL Browser Service, (for distributed engineering in the Editor)	1434
zenAdminSrv.exe	50777
Logging Service	50780
zenVNC.exe	5600 – 5610
SNMP Trap Service	50782
zenLicenseSr	50783
zenLicenseStub	50789
zenLicenseCenter	50689
WEB Service Tunneling	8080
zenon Logic	
Assigned port for zenon Logic or straton depends on the project and service. E.g.: First zenon Logic project occupies 1200 and 9000, second project 1201 and 9001 etc.	1200 – 1210 4500 – 4510 7000 – 7010 9000 – 9010
zenon Analyzer	
Administration Service	50777
Analyzer Connector Service	50778
Analyzer License Service	50779
ZAMS	50781
Drivers	
Driver Simulation	6000 – 6020
Process Gateway OPC Server	135
Process Gateway SNMP	161
Process Gateway Modbus	502
Process Gateway IEC60870-5 104 slave	2402
Process Gateway DEC	5555

Process Gateway DNP3 Slave	20000

Service startup

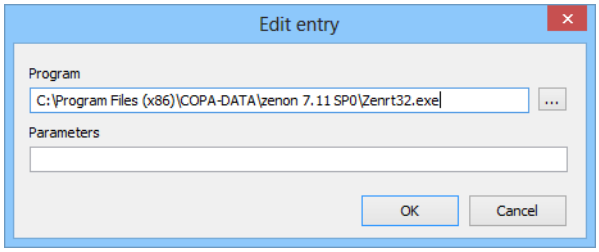
Programs can be started automatically using the **zenStartupMgr** service. You can use this to start Runtime automatically as a service.

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. Maximum length: 259 characters
Parameters	Input of parameters. 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

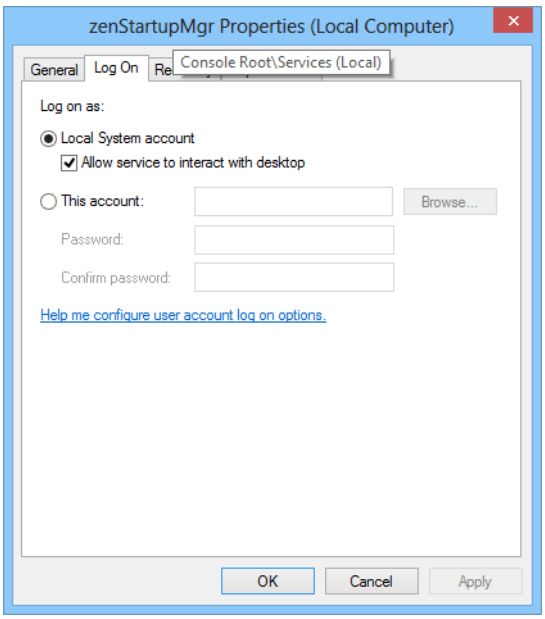
zenon drivers each need several windows. The number of drivers that can be used can be influenced using the **Allow data exchange between service and desktop** option in the properties of the service.

- `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 80).**
Delete	Deletes the selected entry after confirming a confirmation message.
Properties	Opens dialog **Properties** (on page 80) **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.

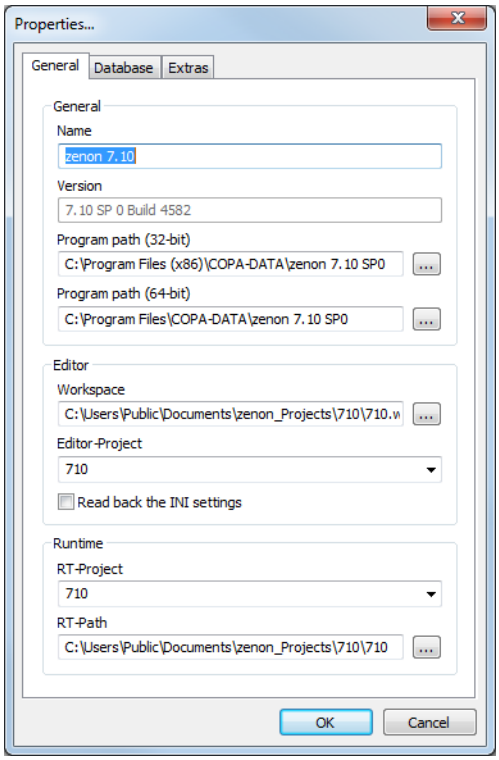
6.2 Properties

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. 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. Input only possible if the path to the 32-bit version was stated and a 64-bit version was detected by zenon. 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

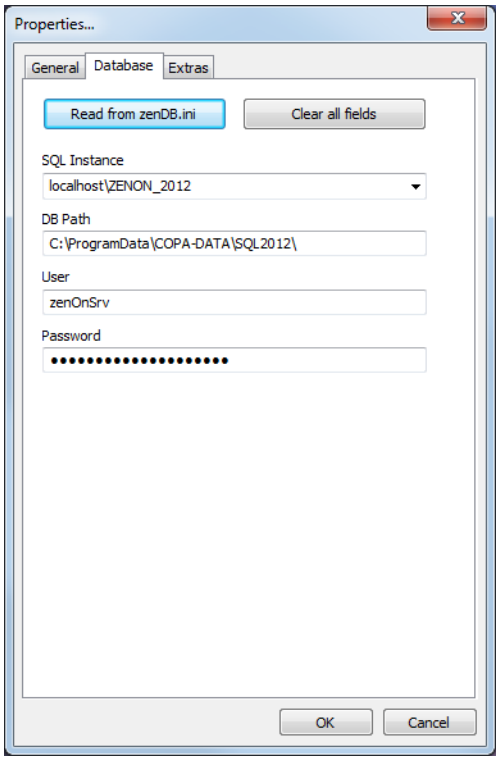
Define the database properties. It is possible to use different SQL instances for the different entries (zenon versions).

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 86).

Display dialog: The display of the dialog is automatically adopted to the selected version (previous 6.51 (on page 86), as of 6.51).

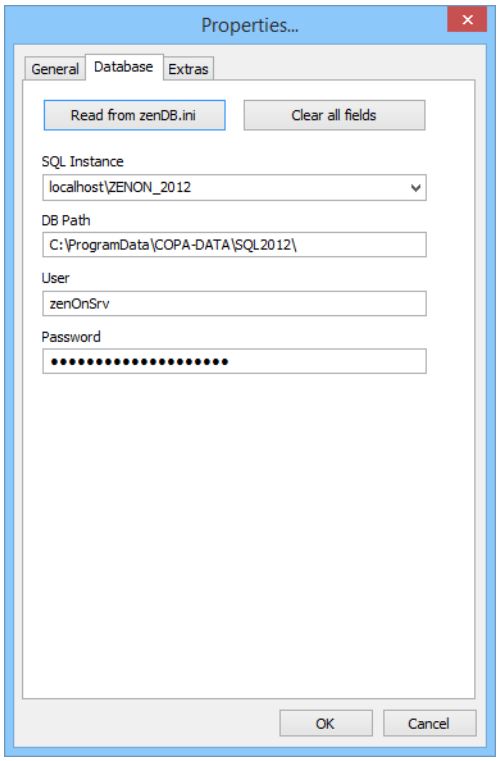


Entry	Function
Read from zenDB.ini	Clicking on the button reads off the settings from the `zenDB.ini` file and the following fields are automatically filled: ▸ **SQL instance** ▸ **DB Path** ▸ **User** ▸ **Password**
Clear all fields	All input field are cleared. Empty entries are not written to zenDB.ini at registering.
SQL Instance	Name of the SQL server instance which should be used. The name can be entered directly in the input field or can be selected from the drop-down list. 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. For example: `C:\ProgramData\COPA-DATA\SQL\` Attention: Different SQL Servers (for example 2008R2 and 2012) must use separate paths. 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. **Necessary rights** In the SQL Server the user must have the following **Server roles**: ▸ public ▸ sysadmin
Password	Password of the user. It is stored encrypted. The entry length is always displayed with 20 characters regardless of the actual length. Attention: The encryption is done via the **Startup Tool**. Therefore you must carry out the database setting via the **Startup Tool**. The password must also be amended on the SQL server for the **zenOnSrv** user.

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. Empty entries are not written to zenDB.ini at registering.
Provider	Connection to the SQL instance. Important information: ▸ Instance name ▸ Used provider ▸ User name ▸ User password For example: Provider=SQLNCLI.1; Password=srv_000; Persist Security Info=False; User ID=zenOnSrv; Initial Catalog=%s; Data Source=localhost\ZENON_DEV;
DB Path	Path for the SQL database of the zenon projects. For example: `C:\ProgramData\COPA-DATA\SQL\` Attention: It is necessary that SQL Server 2005 and SQL Server 2008 R2 use different folders. Background: When converting projects the GUID stays the same. If the same folders are used, both instances overwrite each others database files.

Attention

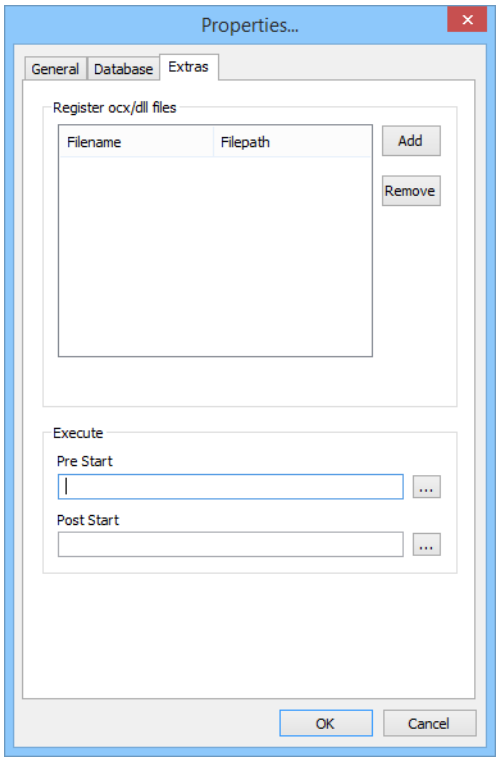
The entry for Provider differs in this dialog from the entry in the zenDB.ini.

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 (on page 63) **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. Attention: Editor or Runtime are only started if this program is ended again.
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. **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!** **Do you really want to apply the change?**	You change the settings for the IP protocol from IPv4 to IPv6 or vice versa. 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. 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. **You have to restart the runtime to apply the changes!** **Attention: Do not forget to adept the settings on other stations as well.** **Apply settings.** **Are you sure this is your intent?**	You change general settings (on page 69) in the same ways as time outs. These changes are written to **zenon6.ini** or **zenon.ini** together with the registration and overwrite any manual configurations. 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, a 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 and safest solution is a new installation of zenon.
zenNetSrv.exe still running!	The **zenNetSrv.exe** could not be closed.	It is possible that a security tool is running on the computer which prevents the access.
Couldn´t find zenSysSrv Service!	The **zenSysSrv.exe** file is missing from the zenon program directory or the wrong version is present.	Most of the time the fastest and safest solution is a new installation of zenon.
zenSysSrv.exe still running!	The **zenSysSrv.exe** could not be closed.	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 92)
- reorganize (on page 95) existing entries (e.g. after older versions have been deleted)
- register (on page 95) 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 92)	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. E.g.: NAME="**Test**"
PATH	X	The user path in which zenon is saved. E.g.: 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. E.g.: PATH=**"C:\Program Files\COPA-DATA**zenon **7.10 SP0"**
PROJECT_RT	-	Name of the Runtime project which should be started. E.g.: PROJECT_RT="**Test project**"
PROJECT_RT_PATH	-	The Runtime folder of the project (see **PROJECT_RT**). E.g.: PROJECT_RT_PATH="C:\Users\Public\Documents\zenon_projects\test projekt"
PROJECT_ED	-	The project which should be activated in the Editor. E.g.: PROJECT_ED="**Test project**"
WSP	-	The workspace with which the Editor should be loaded. E.g.: WSP="C:\Users\Public\Documents\zenon_projects\DEMO622.WSP6"
SQLSRV	-	Name of the SQL Server which should be used by the Editor. E.g.: SQLSRV="MSSQL$ZENON_DEV"
PROVIDER	-	Provider string for the initialization of the SQL connection. E.g.: 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 E.g.: 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. E.g.: PRESTART="C:\zenon versions\zenon 6.50\Dlls\zenVNCCli.exe"
POSTSTART	-	Program call which is executed after the Editor is closed. E.g.: 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

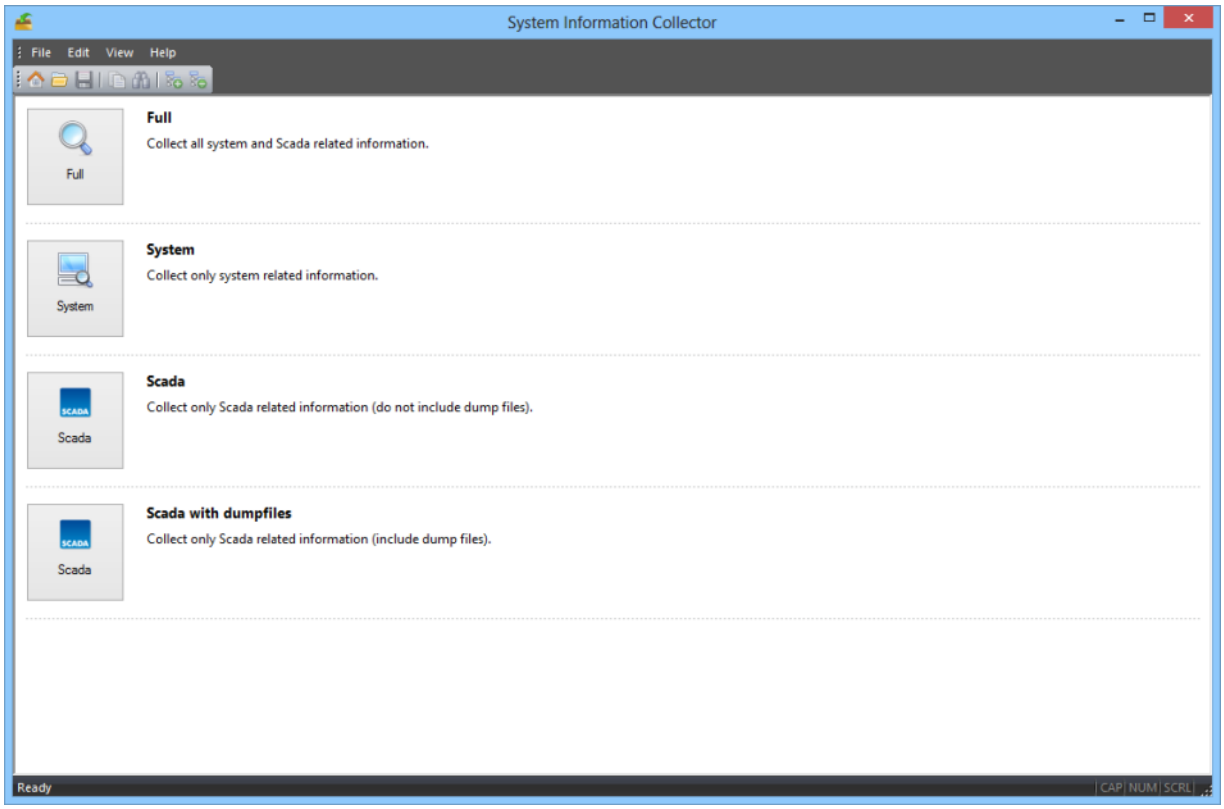
The **System Information Collector** is also installed when zenon is installed. It is located at:

- Computer in the path: `%Program Files (x86)%\Common Files\COPA-DATA\STARTUP`
- Installation medium in the path `\AdditionalSoftware\COPA-DATA 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 TOOLBAR

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 toolbar.

TOOLBAR

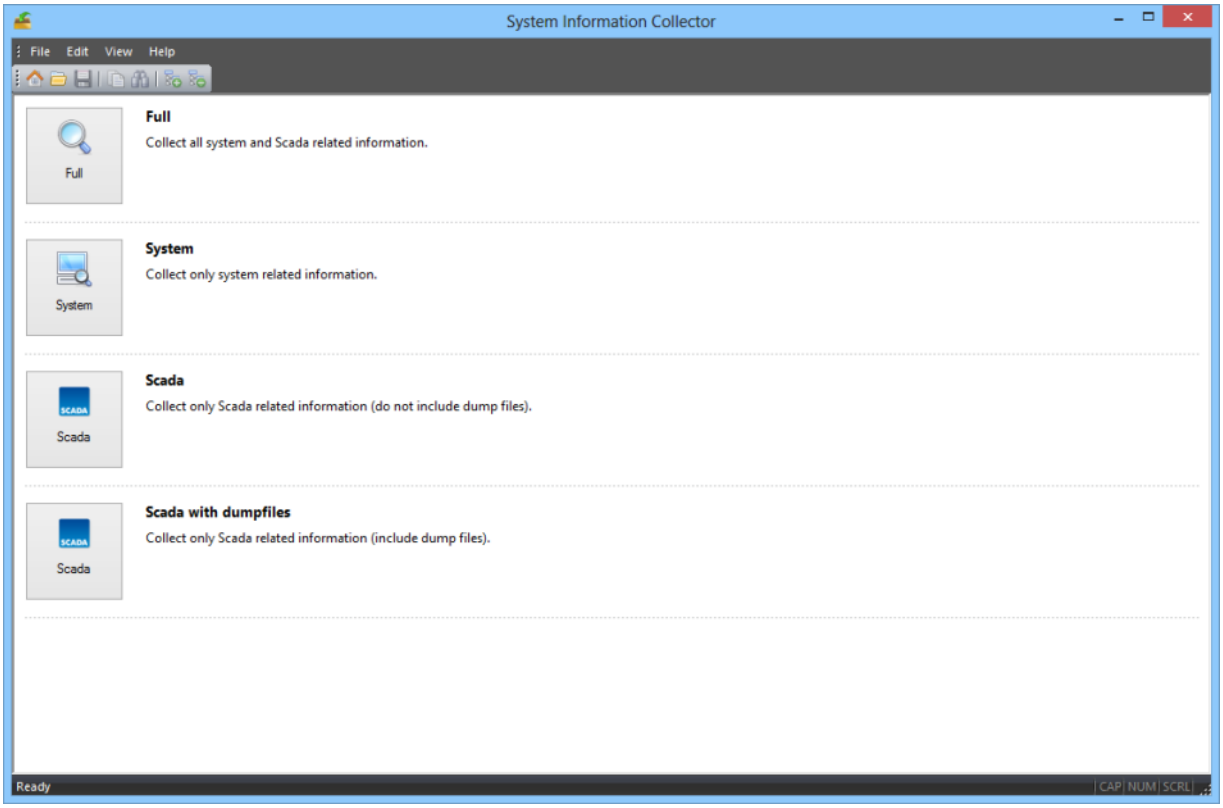
Symbol	Description
Home New Scan	Opens the Start window.
Open	Opens a saved report.
Save	Saves the currently-displayed report as a ZIP file.
Copy	Copies highlighted text to the clipboard.
Find	Opens a dialog to search the current report
Expand	Expands all nodes.
Collapse	Closes all nodes.

7.2 Collecting information

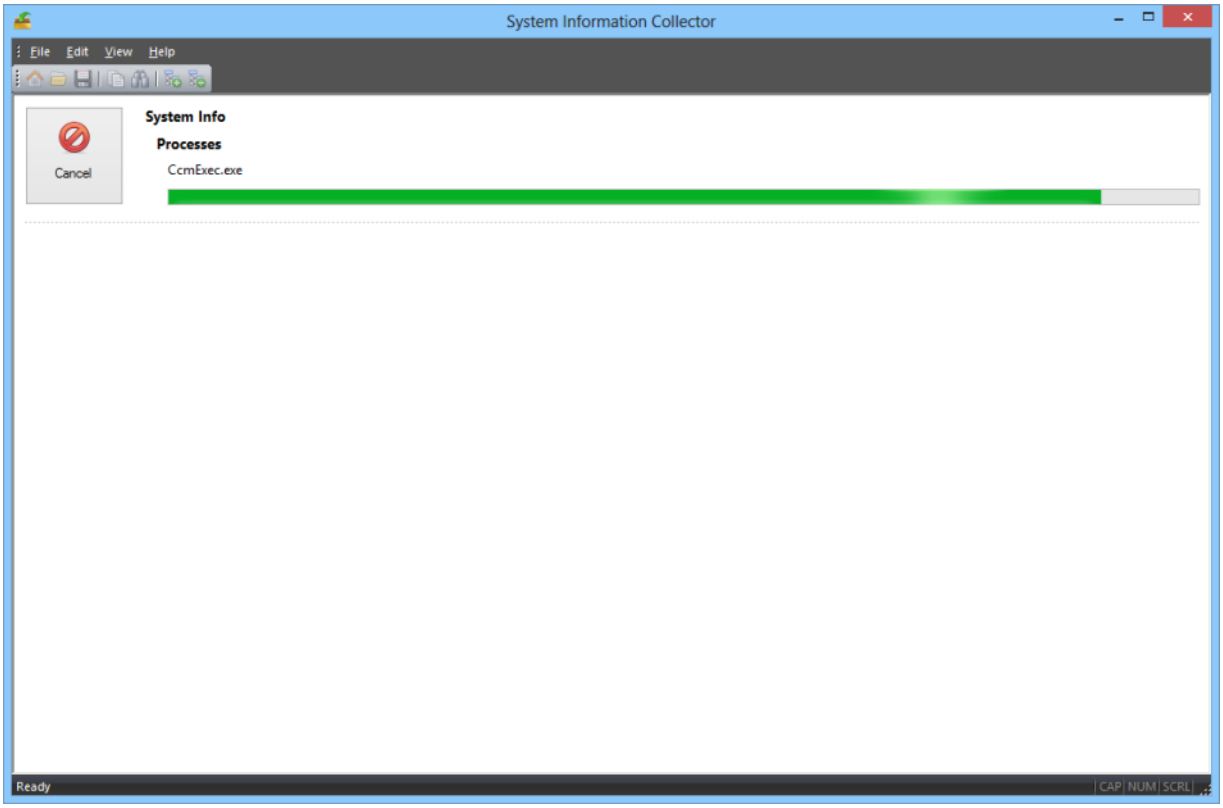
To collect information in an automated manner:

1. Start (on page 96) 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

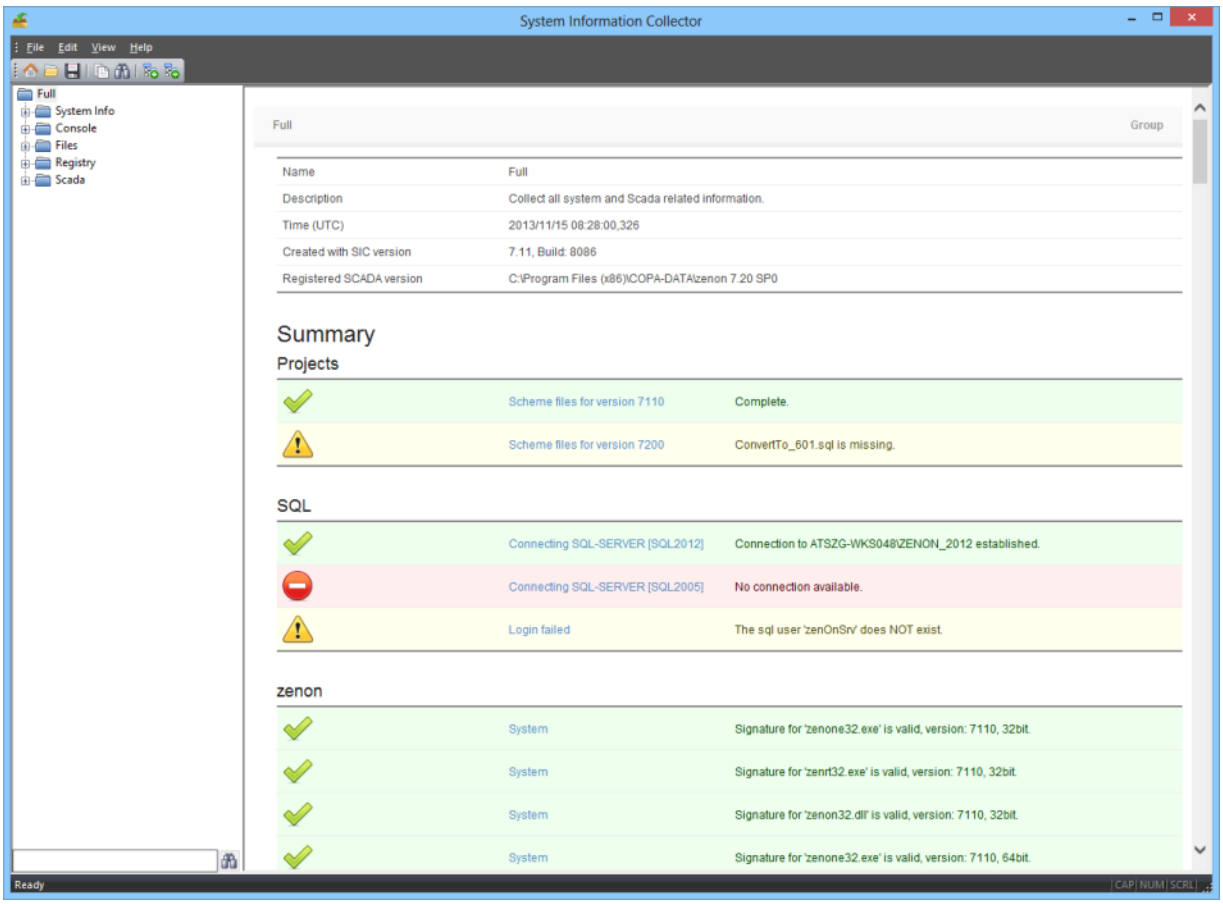
- **Scada with dumpfiles**: collects information about zenon and includes dump files



3. The **System Information Collector** creates a report with the desired information



4. The completed report is displayed in the main window

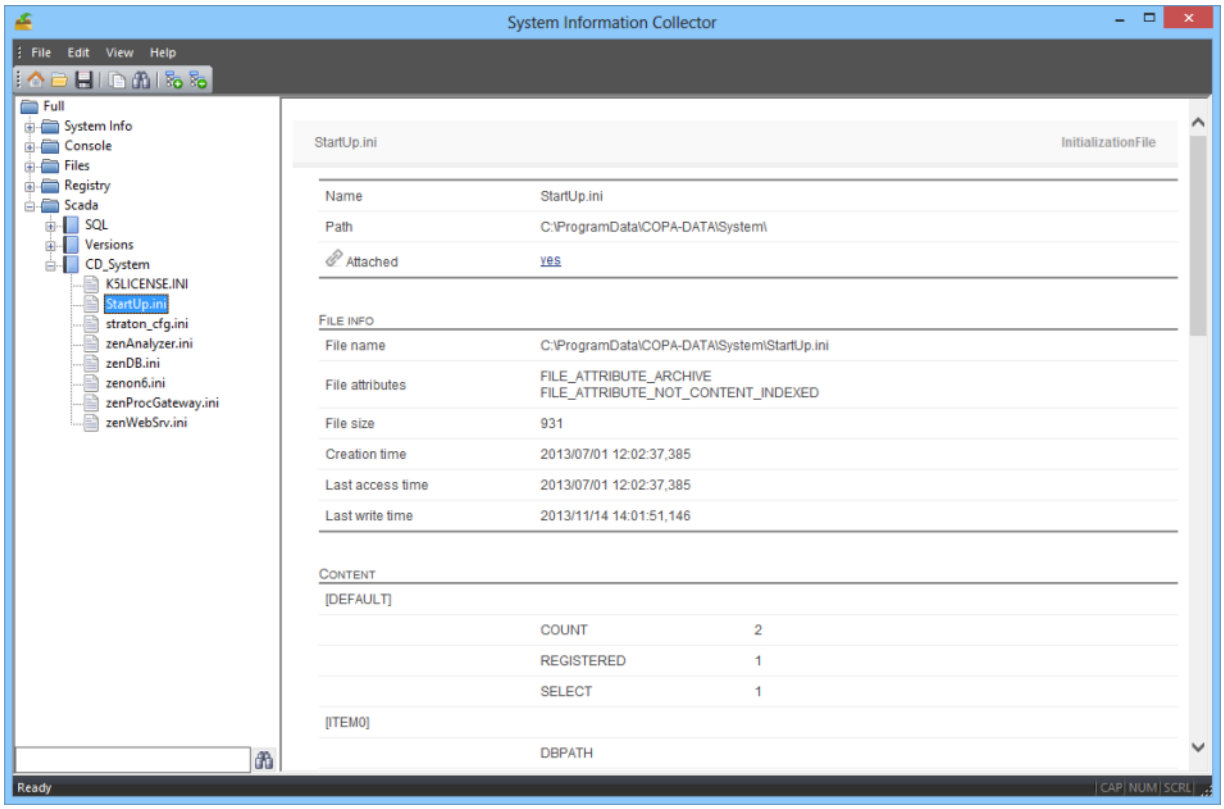


7.3 Using the information

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 toolbar
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:

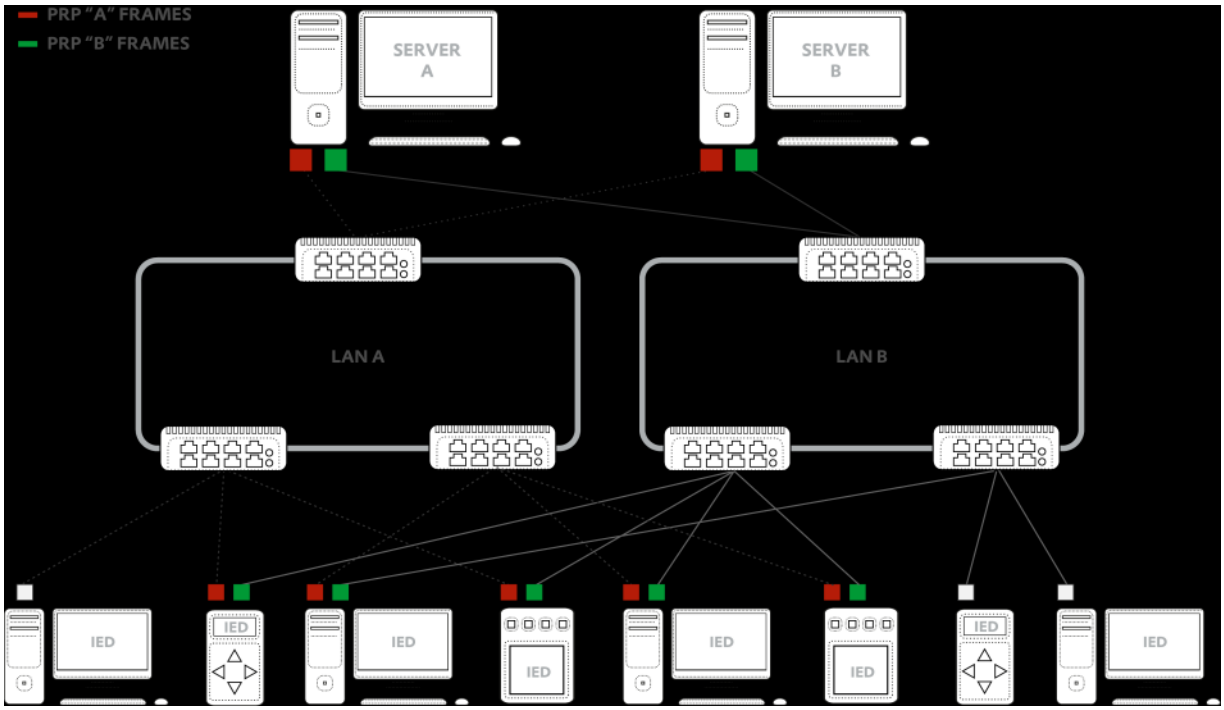
1. highlight the relevant information.
2. Click on the **Copy** symbol or the **Copy** command in the **Edit** menu
3. The selection is saved to the clipboard
4. Insert the content into a text file and save this
5. Repeat this process for further selected information

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.

8. COPA-DATA PRP

zenon supports the Parallel Redundancy Protocol (PRP) for hardware-redundant communication in a network.



PRP communication is carried out at at protocol level directly, regardless of the zenon Editor and zenon Runtime. Special configurations in zenon are not required. To use the protocol, the computer must be configured accordingly.

You can find the network service COPA-DATA PRP, necessary for the use of PRP, on the installation medium. You can find a detailed description of the required configuration steps in this chapter in the installation and configuration (on page 105) chapter.

License information

The network service is supplied.
A valid zenon license is required on the computer for use.

8.1 System requirements

PRP communication is supported for the following operating systems:

- Windows 7
- Windows 8

> **Attention**
>
> *Windows 10 is not supported for PRP communication due to the system.*

8.2 Hardware requirements

The following hardware requirements are applicable for communication via PRP:

- The network card use must support jumbo frames
- Configuration of the locally-administrated MAC address must be possible on the network card used.

> **Attention**
>
> PRP communication is only supported in a redundant network.

8.3 Installation and configuration

To use PRP communication, carry out the following configuration steps.

1. Disconnect the computer with the two network cards from the power supply before installation.
2. Restart the computer
3. Configure your network adapter.
4. Create a network bridge in the system settings (**Bridge**).
5. Install the `COPA-DATA PRP driver`.
6. Configure your PRP connection

PLEASE KEEP IN MIND:

- Administrator rights on the computer are required for installation.
- The system must be restarted for the installation.
- Note the instructions for the respective steps.

> **Attention**
>
> *Ensure that you carry out the configuration steps in the given sequence.*

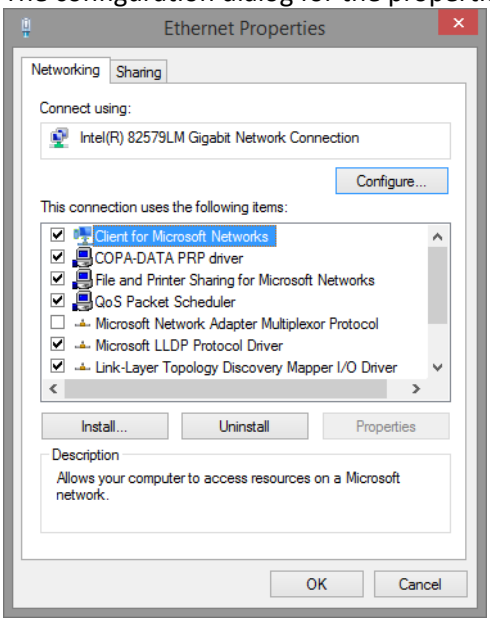
8.3.1 Configuration of network adapter (step 1 of 4)

In the first step, amend the configuration for both network adapters used. The configuration dialog and the naming of the enhanced properties depends on the network card.

NETWORK ADAPTER 1

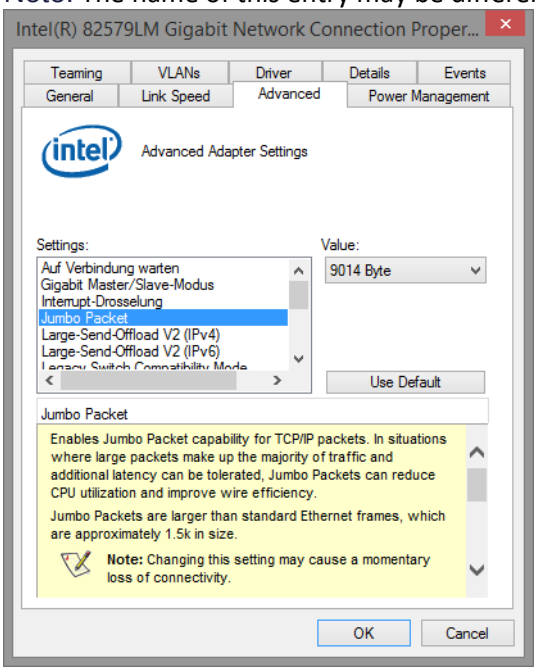
Configure the first network adapter.

1. Open the **Change adapter settings** system setting.
   You can find these settings in the `Control Panel => Network and Internet => Network and Sharing Center`
2. Select the desired network adapter.
3. With the right mouse button, select the **Properties** entry in the context menu.
   The configuration dialog for the properties of the network adapter are opened.



4. Click on the **Configure ...** button
   The properties window of the network adapter is opened.

5. Switch to the **Advanced** tab there.
6. In the list of **settings** there, select the **Jumbo Packet** entry
   Note: The name of this entry may be different for each network card.



7. Select a value in the **Value** drop-down list.
   Select the lowest-available value that is greater than 1530 bytes.
   Attention: The Disabled setting must not be selected.
8. In the **Advanced** tab, select the **Locally-administered address** setting.
9. Enter a unique MAC address in the `Value:` input field. The format of the MAC address depends on the hardware used.
   Examples:
   - 0A:80:41:ae:fd:7e
   - 0A-80-41-ae-fd-7e
   - 0A8041aefd7e
10. Ensure that, for both connections used, the same MAC address is used.
    Change this address in the **Value** input field:
    - This MAC address must start with `0A`!
    - The MAC address in the local network must be unique.
11. Finish configuration of the network card by clicking on the **OK** button.

NETWORK ADAPTER 2

Repeat the steps for the second network adapter.
When entering the MAC address, ensure that the same MAC address as the one in the previous configuration is entered.

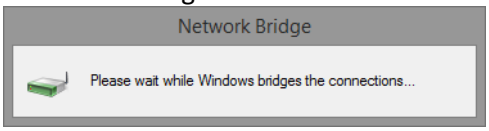
> **Attention**
>
> *Ensure that*
>
> - The MAC address used on both computers is the same
> - It is not used by any other computer in the local network.

8.3.2 Bridge network adapter (step 2 of 4)

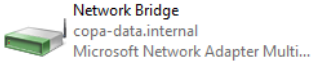
In this step, you combine two network adapters with a network bridge. Amend the configuration for both network adapters used.

Create a network bridge in the system settings.

1. Open the **Change adapter settings** system setting.
   You can find these settings in the `Control Panel => Network and Internet => Network and Sharing Center`
2. Select the two network adapters that you want to use for PRP communication.
   Note: Note that for both network adapters, the necessary configurations have already been carried out. A subsequent amendment to the configuration of a network adapter only becomes effective if you then create a new bridge.
   Attention: Both network adapters selected must be configured with the same MAC address!
3. With the right mouse button, select the **Bridge connections** entry in the context menu.
   A network bridge is created for the selected network adapter. This is visualized in a dialog.



4. The bridge created is displayed in the Control Panel:



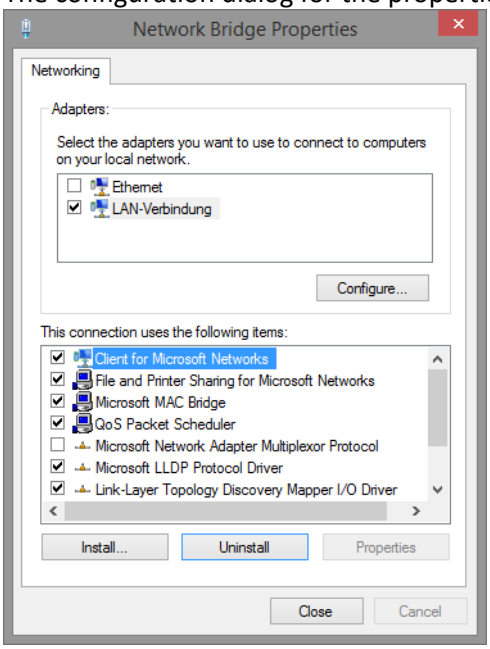
   Attention: The bridge must only contain two adapters.

8.3.3 Installation of COPA-DATA PRP driver (step 3 of 4)

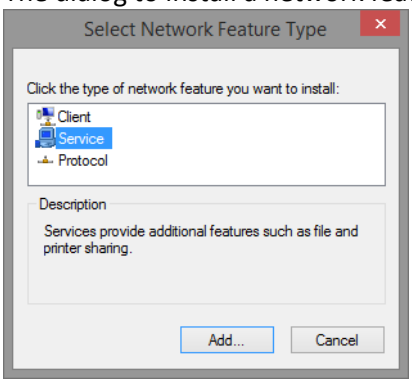
In this step, you install the service system required for PRP communication.

Install the `COPA-DATA PRP driver`

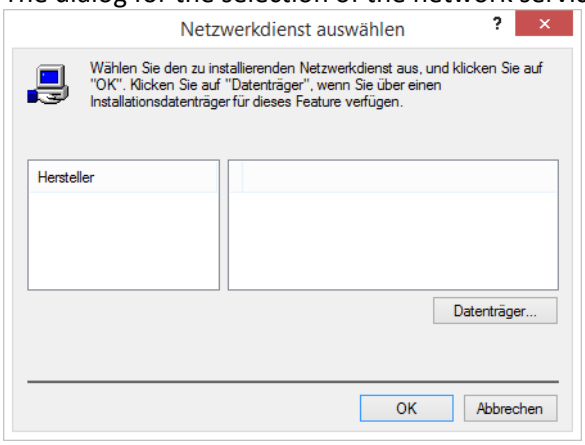
1. Select the bridge created.
2. With the right mouse button, select the **Properties** entry in the context menu.
   The configuration dialog for the properties of the bridge is opened.



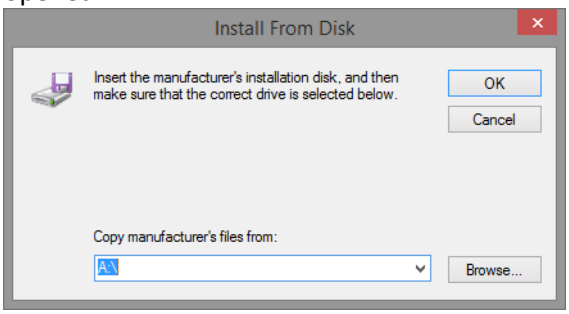
3. Click on the **Install** button.
   The dialog to install a network feature is opened.



4. Select **Service** as the network feature to be installed.
5. Click on the **Add...** button
   The dialog for the selection of the network service is opened.

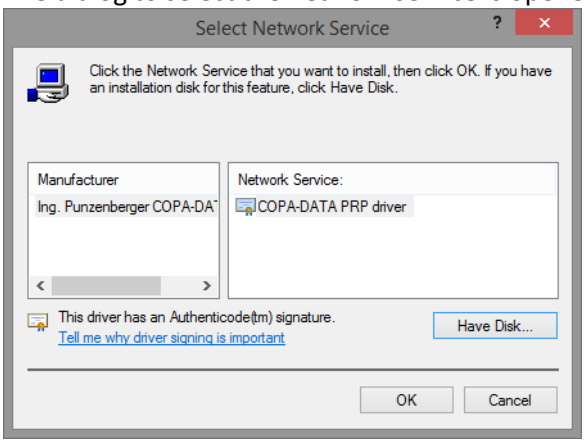


6. Click on the **Data medium ...** button
   The dialog to select the save location of the installation program for the network service is opened.



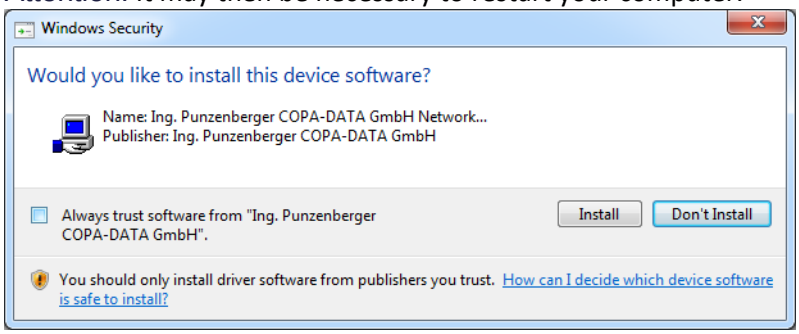
7. Click on the **Browse** button.
8. Go to the following folder on your local computer:
   - `\Programs (x86)\Common Files\COPA-DATA\CDPrpFlt\`
     for 32-bit operating systems.
   - `\Programs\Common Files\COPA-DATA\CDPrpFlt\`
     for 64-bit operating systems.

9. Select the `CDPrpFlt.inf` file.
   Attention: Ensure that you select the correct installer for your operating system (32-bit or 64-bit).
10. Confirm the selection by clicking on **OK**.
    The dialog to select the network service is opened.



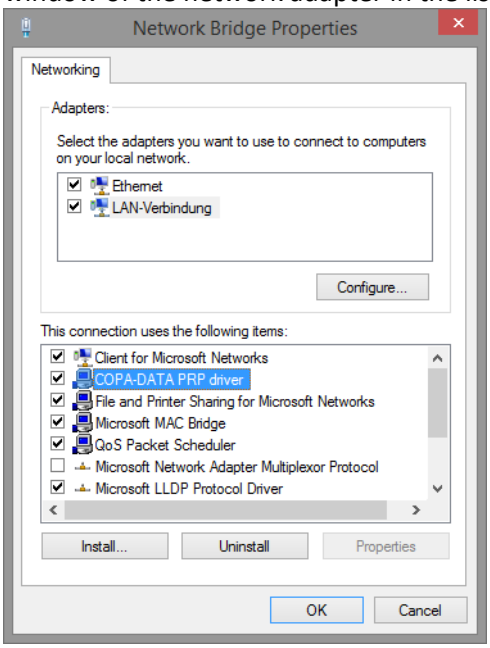
11. Select the `COPA-DATA PRP driver` network service.
12. Confirm your selection with **OK**.

- Confirm the Windows request for confirmation by clicking on the Install button.
  Attention: It may then be necessary to restart your computer.



  Note: This request for confirmation is not shown if you have already activated the "`. . . always trust`" box when installing zenon program components earlier.

13. After successful installation (and restarting the computer) the service is visible in the properties window of the network adapter in the list of elements used.



14. Ensure that the LAN connection and the network service **COPA-DATA PRP driver** are activated using the checkbox.

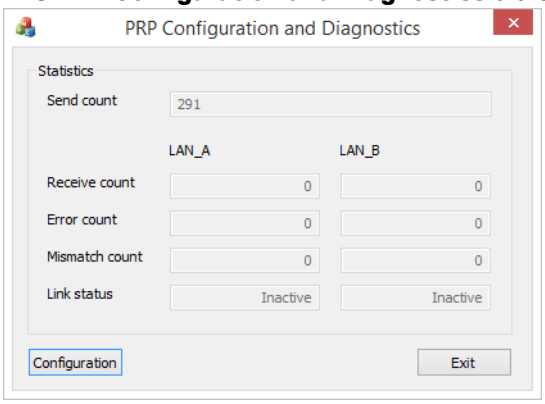
> **Attention**
>
> *Ensure that use in the active system is not jeopardized by the required restart.*

8.3.4 Configuration of PRP connection (step 4 of 4)

Before configuration, ensure that the LAN connection and the **COPA-DATA PRP driver** network service are activated.

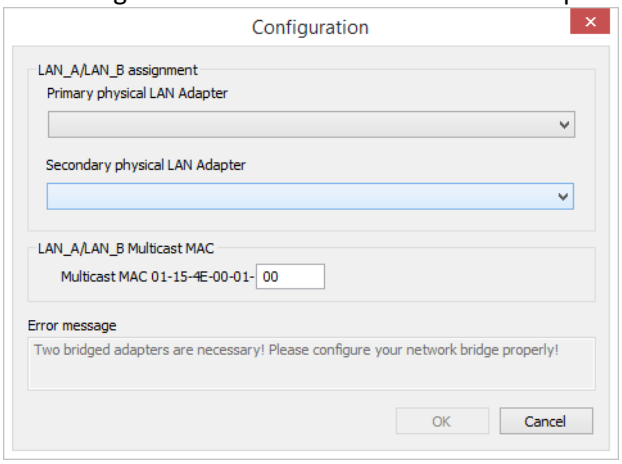
PRP CONFIGURATION

1. Start `PRPCfgDiag.exe`.
   You can find this software on your computer in the `C:\Program Files (x86)\Common Files\COPA-DATA\STARTUP` folder.
   The **PRP Configuration and Diagnostics** dialog is opened.



Note: The **PRP Configuration and Diagnostics Tool** is only available in English.

2. Click on the **Configuration** button.
   The dialog for the selection of the network adapter is opened.



Note: The content of the drop-down list is based on the system settings.

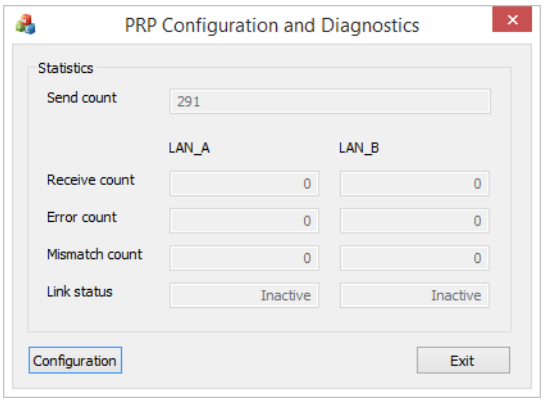
3. Select, from the drop-down list, the network adapter for **LAN_A** and **LAN_B**.
4. Confirm the assignment with **OK**.
5. End the configuration by clicking on the **Exit** button.

> **Information**
>
> *You can find a detailed description of the **PRP Configuration and Diagnostics Tools** in the PRP configuration and diagnosis tool (on page 114).*

8.4 PRP configuration and diagnosis tool

The **PRP Configuration and Diagnostics Tool** performs two tasks:

- Visualization (on page 115)
  Display of the data traffic sent via PRP. The display is separate for the two network adapters used.
- Configuration (on page 116)
  Assignment of the configured network adapter.



Note: This dialog is only available in English.

PRPCfgDiag.exe is supplied with zenon.
You can find this software on your computer in the `C:\Program Files (x86)\Common Files\COPA-DATA\STARTUP` folder.

REQUIREMENTS

The **PRP Konfigurations- und Diagnose Tool** needs the following for operation or configuration:

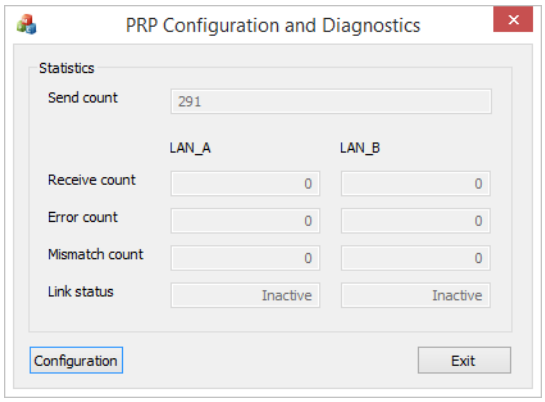
- Two network adapters that are combined into a bridge in the system settings.
  Note: In this bridge, only the two network adapters that are used for PRP communication can be configured. Other network adapters must not be included in this bridge.
- The CDPrpFlt driver must be installed.

> **Information**
>
> *You can find information on the installation and necessary preparations in the system settings in the installation and configuration (on page 105) chapter.*

8.4.1 Statistics

The data flow is visualized in the **Statistics** dialog. The setting is displayed separately for both LAN adapters.

The flow of data is always recorded, even if the tool is not open.



Note: This dialog is only available in English.

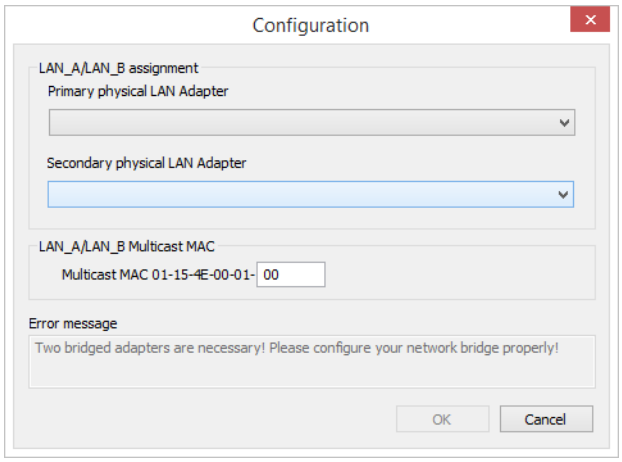
Parameters	Description
Send count	Display of the Ethernet frame sent.
Receive count	Display of the Ethernet frame received.
Error count	Display of invalid PRP frames.
Mismatch count	Display of PRP frames received/sent differently if the network data traffic of the two LAN adapters differs from one another.
Link status	Status of the network card: ▶ `Active` Assigned network card is active and data flow is transferred. ▶ `Inactive` Assigned network card is not active. No PRP Supervision frames are received. There is no PRP station in the network or there is an error.
Configuration	Opens the configuration dialog (on page 116).
Exit	Closes the program. Note: The data continues to be recorded.

8.4.2 Configuration

The following takes place in the configuration dialog:

- Network adapter is assigned by means of a drop-down list.
  The content of the drop-down list is based on the network settings.
  You can find further information in the installation and configuration (on page 105) chapter.
- The multicast MAC address is visualized

- Error messages from the network adapter configuration are visualized in an output window



Attention

The computer must be restarted after changes to the configuration have been made.

Note: This dialog is only available in English.

Parameters	Description
Primary physical LAN Adapter	Assignment of a network adapter to the physical connection for the primary LAN adapter. In the drop-down list, the adapters that are included on the configured bridge are listed. You can find information on this in the installation and configuration (on page 105) chapter.
Secondary physical LAN Adapter	Assignment of a network adapter to the physical connection for the secondary/redundant LAN adapter. In the drop-down list, the adapters that are included on the configured bridge are listed. You can find information on this in the installation and configuration (on page 105) chapter.
LAN_A/LAN_B Multicast MAC	Multicast MAC address for PRP-Supervision frames. This address for communication in the network is preset and cannot be changed. Note: Ensure that no other network adapter in your network uses this address! The last byte can be configured in the input field. The input format for this entry is HEX.
Error message	Output window with error messages.
OK	Accepts all changes and switches to statistics dialog (on page 115).
Cancel	Discards all changes and switches to statistics dialog (on page 115).