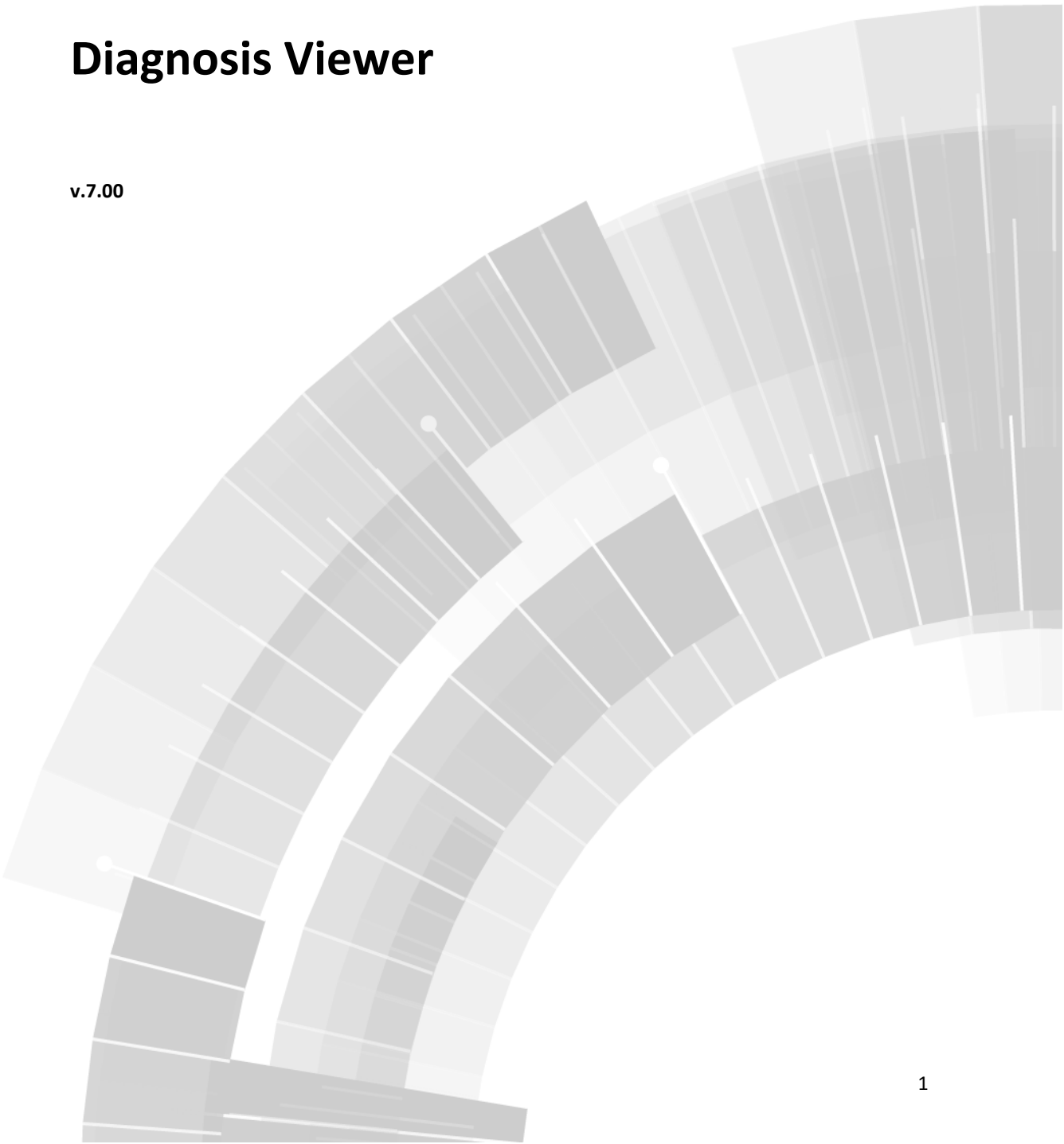
COPA-DATA
do it your way

zenon manual

Diagnosis Viewer

v.7.00



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1. Welcome to COPA-DATA help

GENERAL HELP

If you miss any information in this help chapter or have any suggestions for additions, please feel free to contact us via e-mail: documentation@copadata.com (mailto:documentation@copadata.com).

PROJECT SUPPORT

If you have concrete questions relating to your project, please feel free to contact the support team via e-mail: support@copadata.com (mailto:support@copadata.com)

LICENSES AND MODULES

If you realize that you need additional licenses or modules, please feel free to contact the sales team via e-mail: sales@copadata.com (mailto:sales@copadata.com)

2. Diagnosis Viewer

All zenon modules such as Editor, Runtime, drivers, etc. write messages to a joint log file. You can read and configure them with the Diagnosis Viewer which is installed together with zenon. It allows the reading of existing log files, online logging, saving of the current view, parameterizing the Diagnosis Clients and the Diagnosis Server. You can find it under *Start/All programs/zenon/Tools 7.00 -> Diagnosis Viewer.*

The Diagnosis Viewer is only available in English.

License information

Part of the standard license of the Editor and Runtime.

USING IPV6

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

DRIVER ANALYSIS

zenon driver log all errors in the log files. The default folder for the log files is subfolder **LOG** in directory `ProgramData`, example: `C:\ProgramData\zenon \zenon700\LOG` for zenon version 7.00 SP0. Log files are text files with a special structure.

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

In the Diagnosis Viewer you can also:

- follow currently created entries live
- customize the logging settings
- change the folder in which the log files are saved

Hints:

1. In Windows CE even errors are not logged per default due to performance reasons.
2. The Diagnosis Viewer displays all entries in UTC (coordinated world time) and not in local time.
3. The Diagnosis Viewer does not display all columns of a log file per default. To display more columns activate property **Add all columns with entry** in the context menu of the column header.
4. If you only use **Error logging**, the problem description is in column **Error text**. For other diagnosis level the description is in column **General text**.

5. For communication problems many drivers also log error numbers which the PLC assigns to them. They are displayed in **Error text** and/or **Error code** and/or **Driver error parameter(1** and **2)**. Hints on the meaning of error codes can be found in the driver documentation and the protocol/PLC description.
6. At the end of your test set back the diagnosis level from **Debug** or **Deep Debug**. At **Debug** and **Deep Debug** there are a great deal of data for logging which are saved to the hard drive and which can influence your system performance. They are still logged even after you close the **Diagnosis Viewer**.

3. General

The zenon diagnosis system consists of three parts:

- Diagnosis Server (on page 22): local or or defined in zenon6.ini defined **LogSrv**
- Diagnosis Clients (on page 27): all modules, drivers, services, etc. which write messages
- Diagnosis Viewer (on page 31): Analysis program

VERSIONS

From version 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

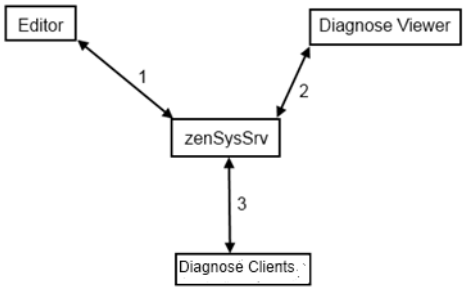
Service **zenLogSrv** buffers log entries until they can be written in the log file. If the memory consumptions increases continuously by **zenLogSrv**, it is an indicator that the log file cannot be written.

4. 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.



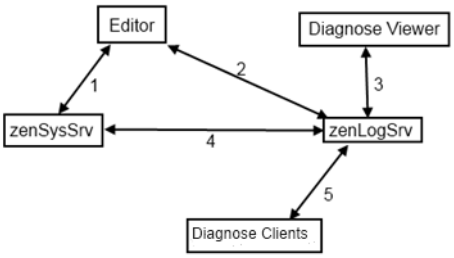
1. The Editor sends log entries, commands and data of the Remote Transport to **zenSysSrv**. **zenSysSrv** sends the configuration of the Diagnosis Clients (Editor, Runtime, driver, web server, web client, etc.) and the Remote Transport data to the Editor.
2. The Diagnosis Viewer sends diagnosis commands, 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 regardless of whether Client and Server are on the same computer or communicate with each other via a network.



1. The Editor sends commands and data of the Remote Transport to **zenSysSrv**. **zenSysSrv** sends data of the Remote Transport to the Editor.
2. The Editors send log entries to **zenLogSrv**. **zenLogSrv** sends the Diagnosis Client configuration to the Editor.
3. The Diagnosis Viewer sends diagnosis commands, diagnosis configurations and log entries to **zenSysSrv**. **zenSysSrv** sends diagnosis data and the Diagnosis Client configuration to the Diagnosis Viewer.
4. The **zenSysSrv** sends log entries to the **zenLogSrv**. **zenLogSrv** sends the Diagnosis Client configuration to **zenSysSrv**.
5. **zenLogSrv** sends the Diagnosis Client configuration to the Diagnosis Clients. The Diagnosis Clients send log entries to **zenLogSrv**.

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

EXAMPLE

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

11).) Each additional component loaded by the Runtime (driver, **zenNetSrv**, etc.) also establish a diagnosis connection.

5. Standard process

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 48). The default folder for the log files is subfolder **LOG** in directory `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 27).

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 12) divided in:

- Diagnosis Clients
- Diagnosis Server
- Versions to make sure that the configuration of the versions does not affect each other

The configuration of the Diagnosis Viewer (on page 31) also enables you to configure settings for the connection:

- Settings of the server (on page 24)
- Connection settings Diagnosis Server connection (on page 33)
- Diagnosis Client (on page 27)
- Diagnosis Viewer - Analysis Program (on page 31)

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.

5.1 Entries in zenon6.ini

The configuration of zenSysSrv and zenLogSrv is carried out via zenon6.ini. At this it is differentiated between version 7.00 and up and versions 6.51 and earlier. With this you can configure old and new

Diagnosis Clients and Diagnosis Servers independent of each other on one device. For example, the LOG entries of old Diagnosis Clients are diverted, without the LOG entries of new clients being affected.

DIAGNOSIS SERVER BEFORE VERSION 7.00 SP0

INI entry	Description
[SYS_REMOTE]	Section in zenon6.ini. Contains parameters for zenSysSrv (Remote Transport and Diagnosis Server).
LOGDirectory=	Defines folder for the LOG files. If there is no entry, the LOG folder in the ProgramData folder is used as a default value. Example: LOGDirectory=%ProgramData%\COPA-DATA\zenon651\LOG
CONFIG=	Configuration string for the Diagnosis Server and **zenSysSrv**. Remote Transport and the diagnosis system use the same server configuration up to and including version 6.51 SP0. The string consists of the following parts: DEVICE=[Device];HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout] ▸ 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 time-out 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. 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 **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 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 time-out 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 time-out 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 time-out time for the connection is seconds.

	Configuration: ▸ DEVICE=TCP/IP ▸ HOST=localhost ▸ PORT=50780 ▸ TIMEOUT=10

HINTS

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

ZENLOGSRV ON A SYSTEM WITH DIFFERENT VERSIONS

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

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

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

5.2 Windows CE

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

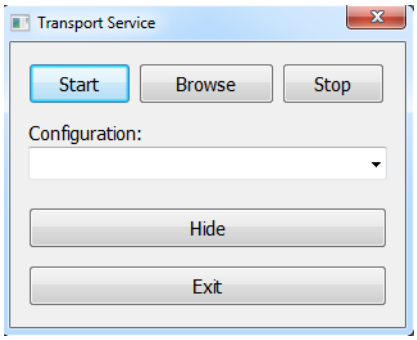
At the configuration (on page 12) of the connection consider the recommendation for parameter `INIT`:

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

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

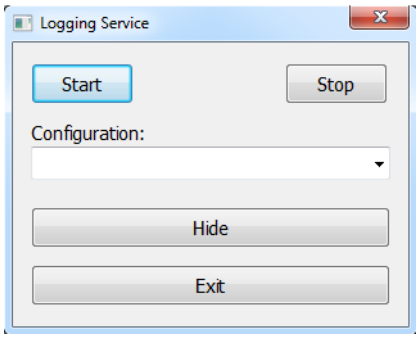
USER INTERFACE UNDER CE

TRANSPORT SERVICE (ZENSYSSRV)



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

LOGGING SERVICE (ZENLOGSRV)



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

6. Diagnosis Server

The Diagnosis Server:

- Creates and manages log files.
- The Server is:
  - implemented from zenon 7.00 on as zenLogSrv
  - up until zenon 6.51 integrated in the zenSysSrv.
- The configuration of the server is read from the zenon6.ini (on page 12).
- The server writes the received log data into the log file.
- The saving location for the files has to be configured. Standard: `%ProgramData%\COPA-DATA\LOG\`

- Log files are named after the following fashion `LOG<YYMMTThhmmss>.txt`.
- The server is multi client able. Several evaluations can connect to the server simultaneously.
- It is possible to connect to the server online, to see the current logging messages.
- It is possible to connect to diagnosis servers other than the local and to execute the same tasks (configuring server, configuring clients, online logging) as on the local server.
- The parameters of the current server (with which the Diagnosis Viewer is connected) can be modified. If a modification of another diagnosis server is needed, the server connection can be changed in the menu under *File – Connect to…*.
- The menu entry **`Settings – Server configuration`** is only available, if online logging is not used at the moment.

6.1 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

6.2 Settings of the server

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

CONFIGURATION VIA ZENON6.INI

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

CONFIGURATION VIA DIALOG

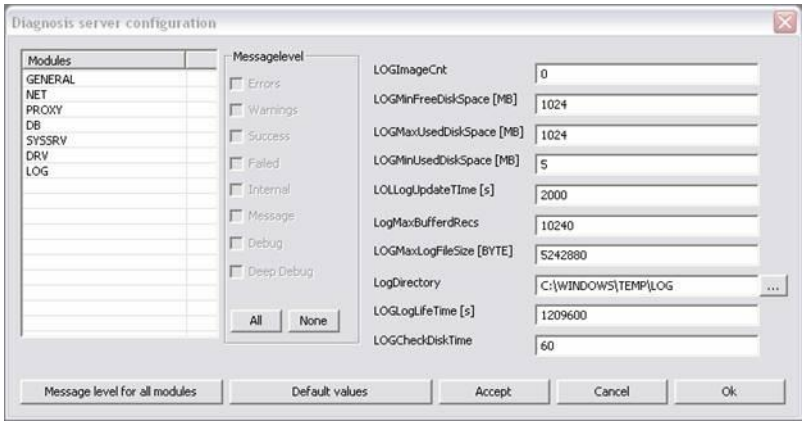
To configure the Diagnosis Server via the dialog:

1. start the Diagnosis Viewer
2. open entry *File Connect to... (on page 33).*

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.
Message level	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 cheked, 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.

7. Diagnosis Client

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

- If the Diagnosis Server cannot be reach, a reconnect is carried out every 500ms.
- If no connection could be established after half the timeout, the system tries to start the service zenSysSrv or zenLogSrv.

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

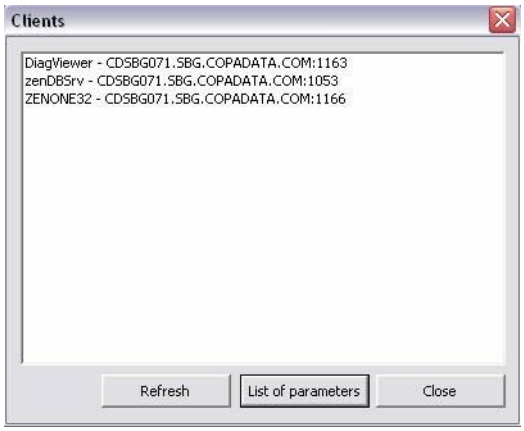
CONFIGURATION DIAGNOSIS CLIENT

To configure the Diagnosis Client via the dialog:

1. start the Diagnosis Viewer
2. open entry *Settings -> Client configuration*
   (only available if logging is inactive)
3. highlight a Client
4. click on **List of parameters**

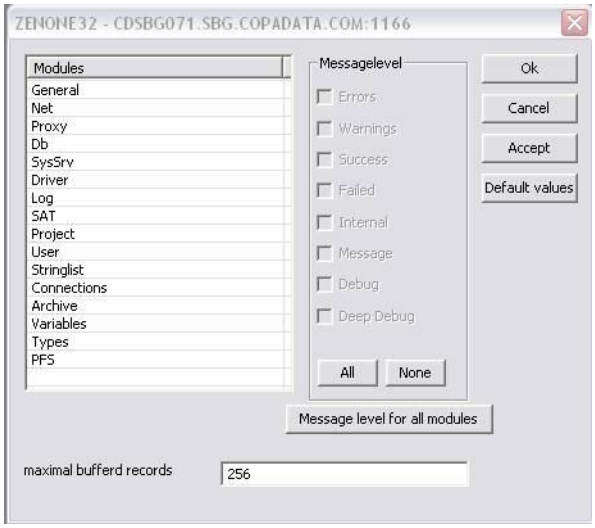
5. The dialog for configuration is opened
6. configure the Client
7. Close the dialog by clicking on ok
8. repeat the procedure for other Clients if necessary

CLIENT LIST



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

CONFIGURE CLIENT



The available standard modules:

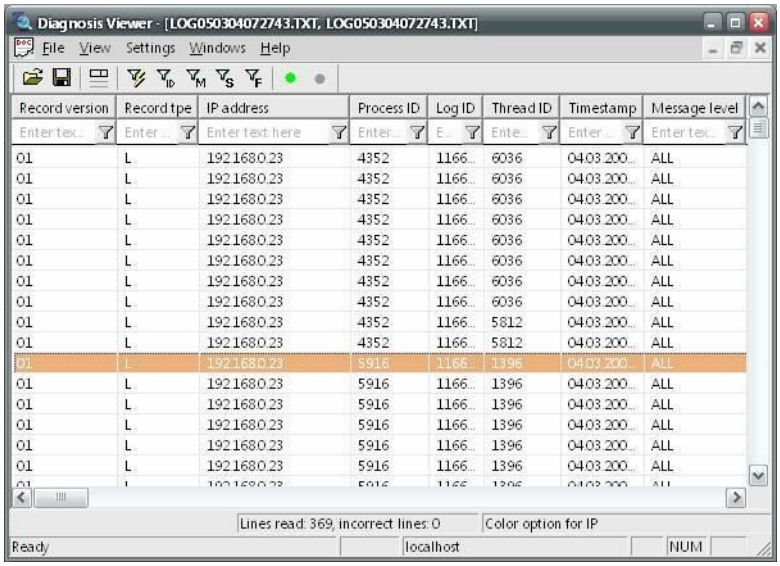
Parameters	Description
Modules	Selection of the modules which you want to configure. The list is made up of standard modules and modules dependent on the respective client. ▸ **General**: General messages ▸ **Net**: Network messages ▸ **Proxy**: Messages of the zenon Proxy ▸ **Db**: Messages of ZenDbSrv ▸ **SysSrv**: Messages of ZenSysSrv ▸ **Driver**: Messages from a driver ▸ **Log**: Messages from logging ▸ **SAT**: SICAM 230 specific messages
Message level	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 dialog.
Accept	Applies all changes. The dialog remains open.
Default values	Enters the default values.

8. 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:

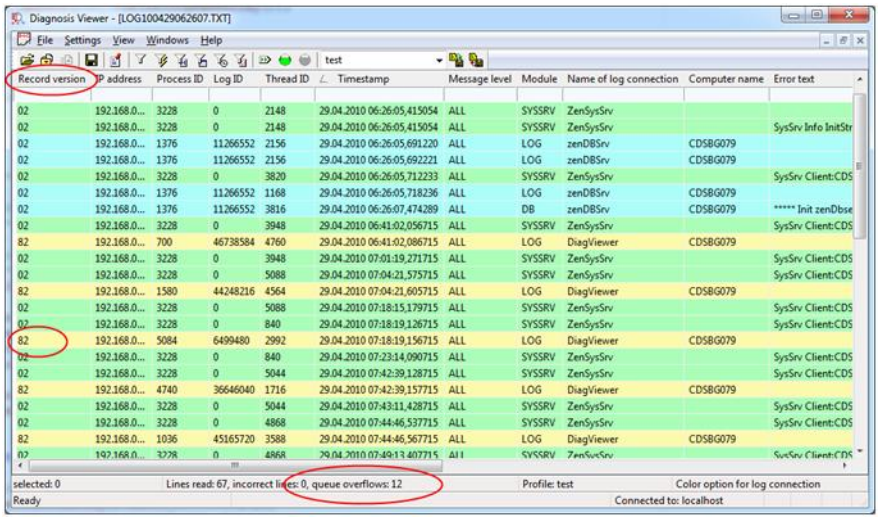
1. select File -> Open
2. the dialog for selecting a log file is opened with focus on the configured default folder
3. select the desired file
4. the log file is displayed



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 40) 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 bar: **`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.

8.1 Global settings

The entries are in the English language.

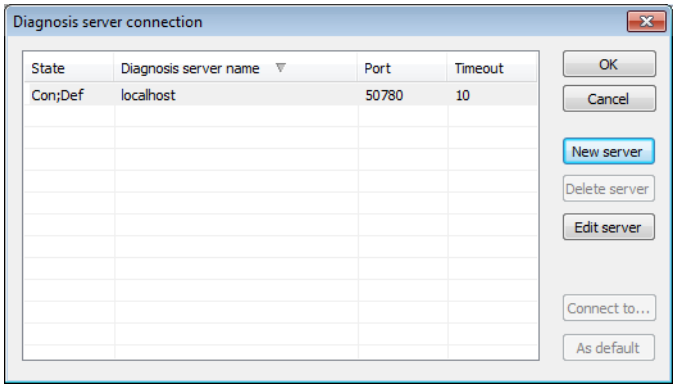
Parameters	Description
File	Commands in menu File.
Open	Opens dialog for selecting a log file saved in TXT format. Each newly opened log file is displayed in its own window.
Open to active document	Each new log file is added to the active window.
Close	Closes the active window.
Save	Saves the log files 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 24).
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.

8.1.1 Connection settings Diagnosis Server connection

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

SELECT DIAGNOSIS SERVER

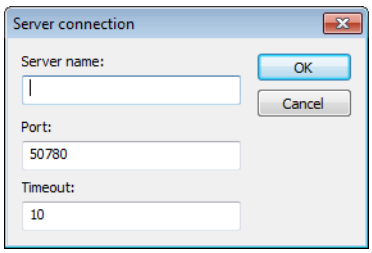
Click on *File -> Connect to...* to open the dialog for selecting a Server:



Parameters	Description
List Server	Lists all configured Servers and displays them: ▸ Status ▸ Name ▸ Port ▸ Timeout
OK	Applies settings and closes 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

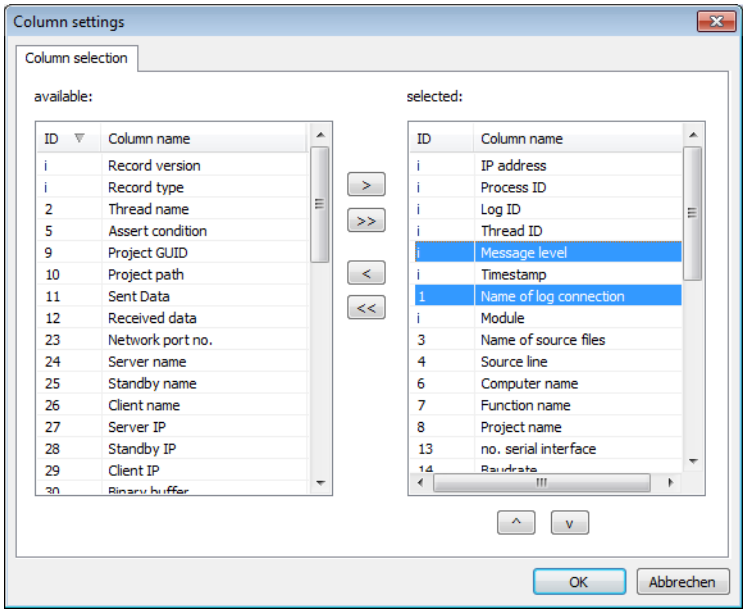
Click on **New Server** or **Edit Server** in dialog Diagnosis Server connection to open the dialog for configuring the Server:



Parameters	Description
Server name	Name of the PC to which to connect. The following must run on the PC: up to 6.51: **zenSysSrv** from version 7.00 on: **zenLogSrv**
Port	Port of the service on the target computer: up to 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 dialog.
Cancel	Discards settings and closes the dialog.

8.1.2 Column settings

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



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

9. Possibilities of Filtering

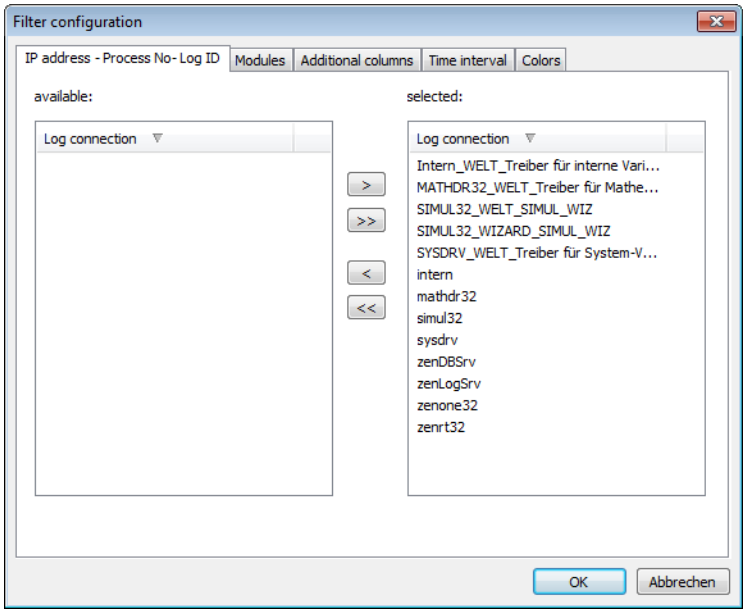
To define filters open the corresponding filter dialog via the corresponding symbol or the tab of the filter.

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 39)**.
3	**Change pre-filter for modules**	Opens tab **Modules** (on page 40).
4	**Change pre-filter for additional columns**	Opens tab **Additional columns** (on page 41).
5	**Change pre-filter for time interval**	Opens tab **Time interval** (on page 42).
6	**Change pre-filter for coloring**	Opens tab Colors (on page 43).

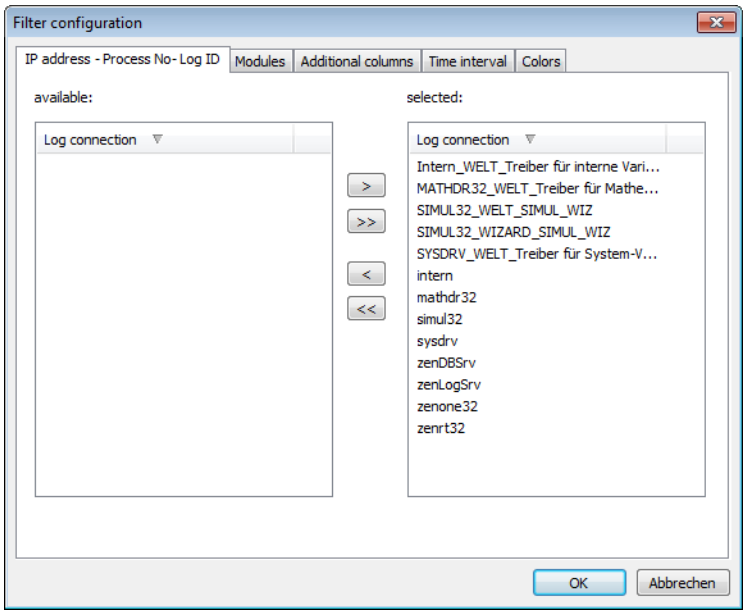
FILTER DIALOG



Tabs	Description
IP-ProcessID-LogID	Opens tab **IP address - Process No - Log ID** (on page 39) for configuring the connection which should be logged.
Modules	Opens tab **Modules** (on page 40) for the modules which should be logged.
Additional columns	Opens tab **Additional columns** (on page 41) for selecting additional columns which should be displayed.
Time interval	Opens tab **Time interval** (on page 42) for defining time filter.
Colors	Opens tab Colors (on page 43) for selecting the color-coding of information.

9.1 IP address - Process No - Log ID

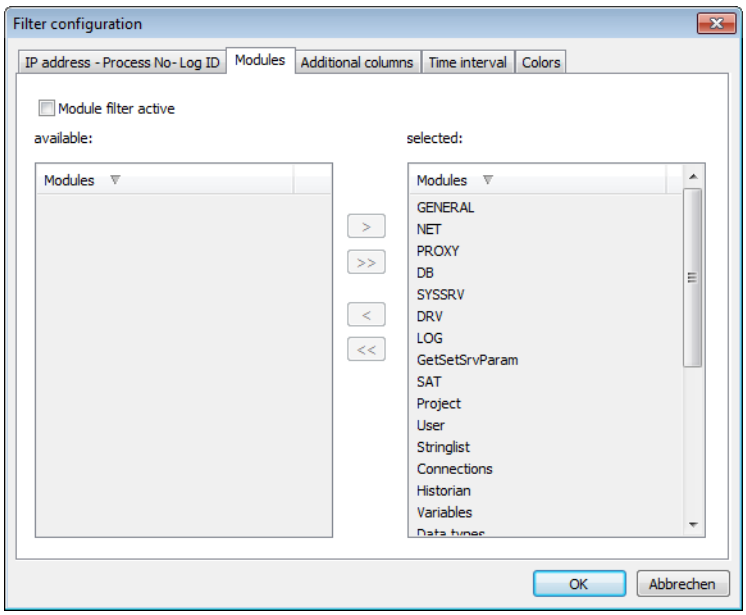
Configuration of the connections and processes which should be displayed.



Parameters	Description
available	List of available connections.
selected	List of selected connections.
Cursor keys	Add selected (>) or all (>>) connections to list **selected** or removes them from the list (< or <<).
OK	Applies all changes from all tabs and closes dialog.
Cancel	Discards all changes from all tabs and closes dialog.

9.2 Modules

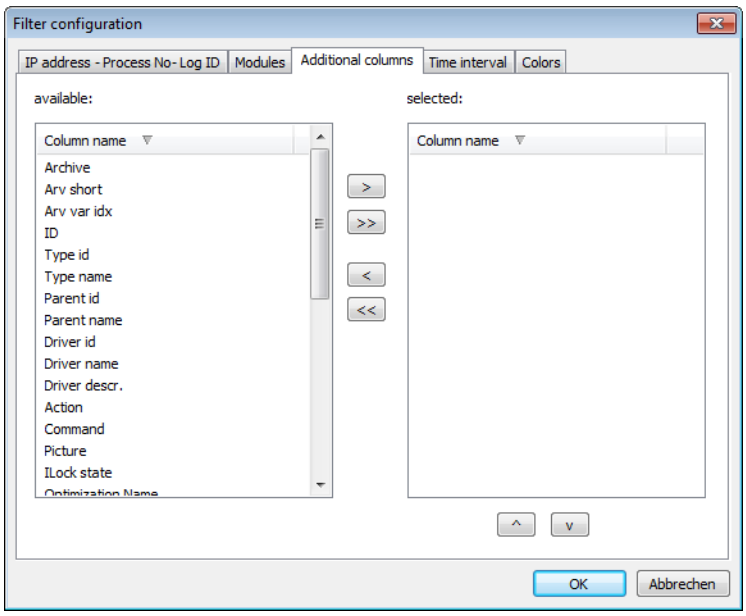
Selection of the modules which should be displayed.



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 from all tabs and closes dialog.
Cancel	Discards all changes from all tabs and closes dialog.

9.3 Additional columns

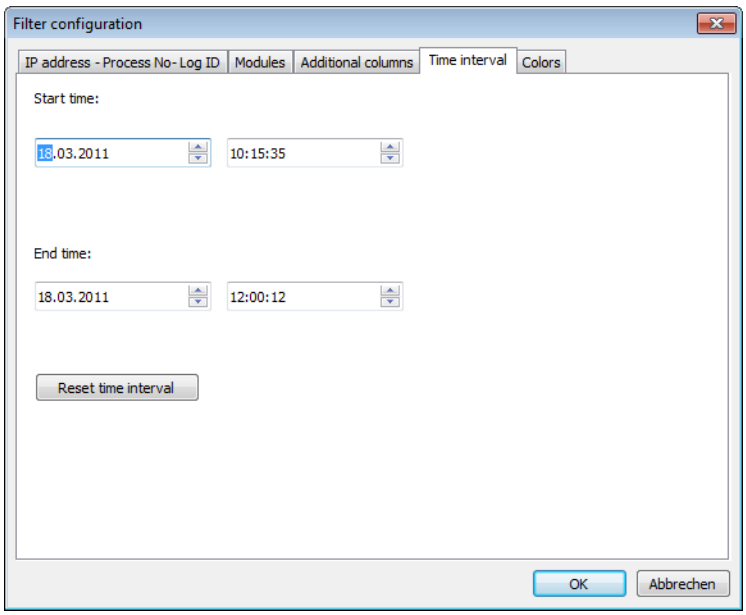
Selection of the columns which should be displayed additionally.



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 from all tabs and closes dialog.
Cancel	Discards all changes from all tabs and closes dialog.

9.4 Time interval

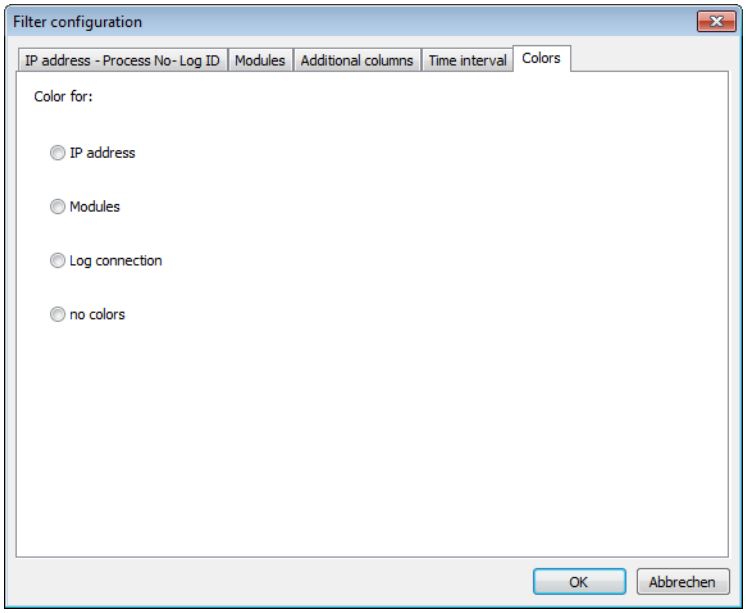
Configuration of the time filter for displaying the entries.



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

9.5 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 from all tabs and closes dialog.
Cancel	Discards all changes from all tabs and closes dialog.

10. Reading the log files

One or more log files can be opened in an analysis at the same time.

A pre-filter 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.

Another filter possibility is available with the filter columns. Filter criteria can be entered for each column 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 in the log file:

Parameters	Description
IP address/Process ID/Log ID	These fields identify the clients and allow the message to be assigned.
Name of log connection	Shows the connection name.
Thread ID	ID of the thread, from which the message was entered.
Timestamp	Time of the message in UTC.
Message Level	Shows the name of the message level, which entered the message.
Modules	Name of the module, which entered the message.

Optional fields with fix ID.

ID	Constant	Description
1	**logid_logname**	Name of logging connection
2	**logid_threadname**	Thread name
3	**logid_sourcefile**	Source file name
4	**logid_sourceline**	Source line
5	**logid_assertcond**	Assert condition
6	**logid_compname**	Computer name
7	**logid_funcname**	Function name
8	**logid_prjname**	Project name
9	**logid_prjguid**	Project GUID
A	**logid_prjpath**	Project path
B	**logid_tx**	Sent data
C	**logid_rx**	Received data
D	**logid_serialport**	Number of the serial interface
E	**logid_baud**	Baud rate
F	**logid_dtr**	Dtr setting
10	**logid_rts**	Rts setting
11	**logid_bytesize**	Serial character length
12	**logid_parity**	Parity
13	**logid_stopbit**	Number of stop bits
14	**logid_ctsflow**	CTS
15	**logid_dsrflow**	Dsr
16	**logid_dsrsens**	Dsr sensitivity
17	**logid_port**	Network port number
18	**logid_srvname**	Server name
19	**logid_sbname**	Standby name
1A	**logid_cliname**	Client name

1B	**logid_srvIP**	Server IP address
1C	**logid_sbIP**	Standby IP address
1D	**logid_cliIP**	Client IP address
1E	**logid_bindump**	Binary buffer
1F	**logid_ptr**	Pointer
20	**logid_classname**	Class name
21	**logid_errcode**	Error code
22	**logid_dllinstance**	DLL instance handle
23	**logid_dllname**	DLL name
24	**logid_errpar1**	Driver error parameter 1
25	**logid_errpar2**	Driver error parameter 2
26	**logid_trace**	Trace message
27	**logid_errortxt**	Error text
28	**logid_errorfile**	Error file name
29	**logid_succeedcond**	Condition for success
2A	**logid_succeedvalue**	Value when successful
2B	**logid_net**	Net address
2C	**logid_db**	Data block
2D	**logid_ofs**	Offset
2E	**logid_bit**	Bit number
2F	**logid_area**	Area in PLC
30	**logid_dir**	Shows the direction of the communication in a string.
31	**logid_txt**	General text
32	**logid_mainvers**	Main version number
33	**logid_minorvers**	Minor version number
34	**logid_buildvers**	Build number
35	**logid_sp**	Service pack

36	**logid_hotfix**	Hotfix number
37	**logid_clisrc**	Client, which sent the command
38	**logid_clidst**	Client, which is the target for the command
39	**logid_pvid**	Datapoint number (channel number)
3A	**logid_pvname**	Datapoint name
3B	**logid_pvvalue**	Value of datapoint
3C	**logid_pvstatus**	Status of datapoint
3D	**logid_pvtime**	Time stamp of datapoint in sec
3E	**logid_duration**	Time duration in ms
3F	**logid_cnt**	Number, counter

11. 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.

11.1 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

11.2 Search function

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

11.3 Profile

Column settings can be saved as profiles.

To save profiles:

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

To load profiles:

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

The profiles are saved a *.lvs files.

12. Troubleshooting and messages

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 terminated. 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 7)).

LOG ENTRIES

Entry	Description
SysSrv received not supported network message!	**zenSysSrv** received a network telegram which is not supported. Example: Log entries.
LogSrv received not supported network message!	**zenLogSrv** received a network telegram which is not supported. Example: Remote Transport commands.
Could not open listening port. Server will be stopped.	The **zenLogSrv** or the **zenSysSrv** could not open its Listening port. The error message is logged as follows: ▸ zenLogSrv and zenSysSrv at 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 to the zenSysSrv
- LogSrv: zenLogSrv
- LogCli: Diagnosis Client

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