zenon
by COPA-DATA

# zenon manual

## Project management and workspace

v.8.20

# Contents

# 1 Welcome to COPA-DATA help

## ZENON VIDEO TUTORIALS

You can find practical examples for project configuration with zenon in our YouTube channel (https://www.copadata.com/tutorial_menu). The tutorials are grouped according to topics and give an initial insight into working with different zenon modules. All tutorials are available in English.

## GENERAL HELP

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

## PROJECT SUPPORT

You can receive support for any real project you may have from our customer service team, which you can contact via email at support@copadata.com.

## 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.

# 2 Project management and workspace

A workspace is assigned to every project.

The workspaces and projects are displayed in the project manager.

# 3 Workspace

Workspaces are stored in a file with the file suffix *.wsp6*. Double-clicking on this file starts the 32-bit version of the zenon Editor.

Within one workspace, several projects can be created and managed. All data which are defined and stored for a workspace are a component of the internal database of zenon.

The managing of several projects in one workspace recommends itself if the same plant parameters are present (screens etc.) and copying of the data makes the configuration significantly easier or if several projects in one plant are connected via a network. Several projects can be processed at the same time.

Alternatively, another workspace can be generated in another folder for the creation of projects.

### Example

/CUSTOMER1/PROJECT (one or more projects in the database)

/CUSTOMER2/PROJECT (one or more projects in the database)

The structure of the database is defined by schema files. They are the basis for the completely new creation of a project database. An additional database file in MS-ACCES format (MDB) exists for the Recipegroup Manager.

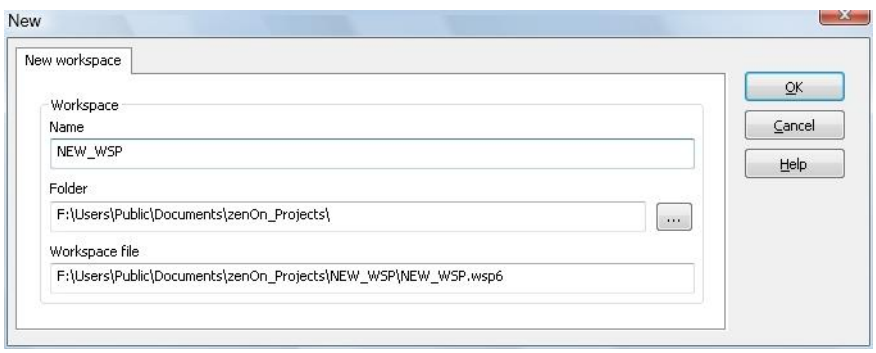
### Attention

No preconfigured data are present!

## 3.1 Create new workspace

There are two methods for creating a new workspace:

- **Drop-down list > File -> Workspace -> New** or
- **Context menu** of entry workspace in the project tree / entry **Workspace / New**



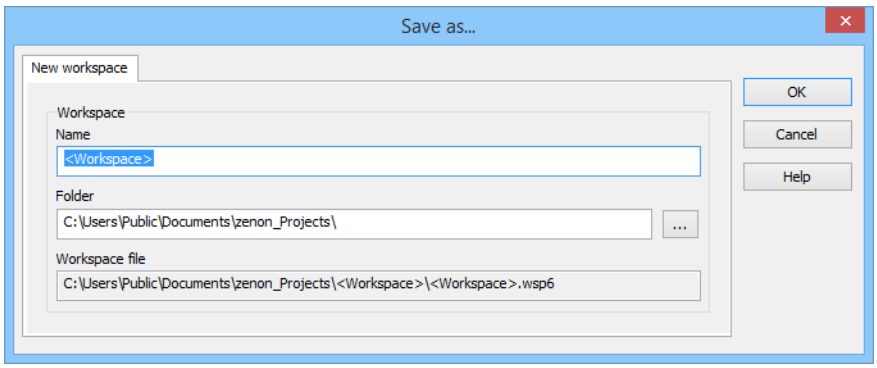
| Parameters | Description |
|---|---|
| **Name** | Choose a name for your new workspace. The default name **<Workspace>** is invalid and must be replaced.<br><br>Allowed are: Numbers, letters and the special underscore character (_). |
| **Storage location** | Select a folder for saving the new workspace. The user directory is suggested as a default save location. |
| **Workspace file** | The path is created automatically from your input. |

## 3.2 Save workspace

There are two methods for saving a workspace:

- **Drop-down list / File / Workspace** / **Save** or **Save as** or
- **Context menu** of the entry workspace in the project tree / entry **Workspace / Save orSave as**

If you choose the entry **Save as** you can choose the storage location yourself. In this case, an existing workspace is saved under a new name.




| Parameters | Description |
|---|---|
| **Name** | Choose any name you like for your workspace. The default name <Workspace> is invalid and must be replaced.<br><br>Allowed are: Numbers, letters and the special underscore character (_). |
| **Storage location** | Select a folder for saving the new workspace. The user folder is suggested as a default save location. |
| **Workspace file** | The path is created automatically from your input. |

The workspaces are saved a *.WSP files.

### Information

If a project with a lower version number than the Editor exists in the workspace, you cannot select menu item "Workspace/save as ...". These projects must first be converted to the Editor version before the workspace can be saved.

## 3.3 Edit existing workspace

There are two methods for opening an existing workspace:

- **Drop-down listFile-> Workspace-> Open** or
- Context menu of the **Workspace** node in the project tree -> Command **Workspace-> Open**

## 3.4 Backup and restore of workspaces

Information on the backup and restore of existing workspace can be found in the chapter Project backups / Section Backup and restore of workspaces.

# 4 Project

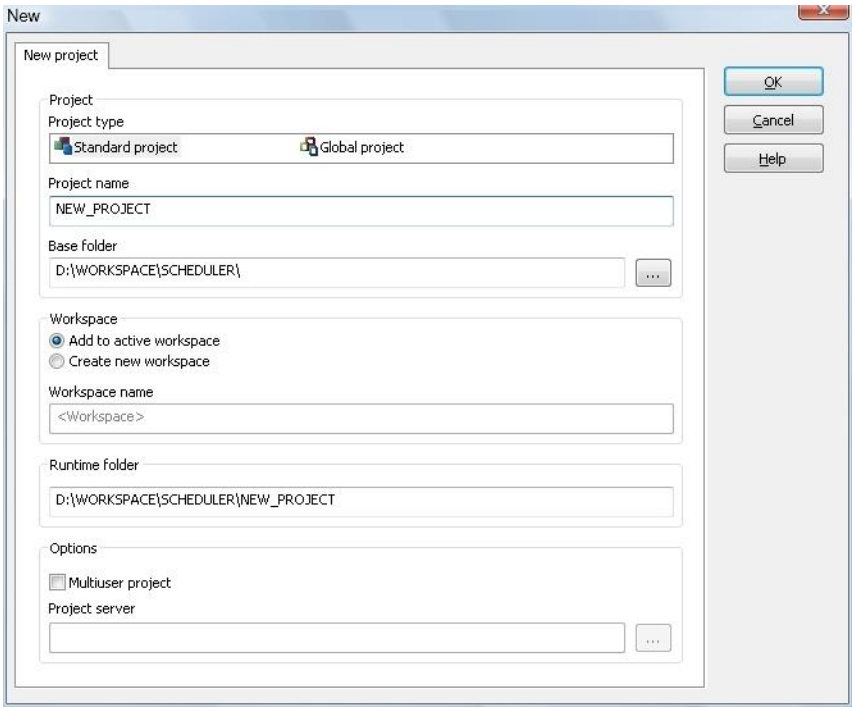
Once the Workspace is open, one or more projects can be edited or selected in the Project manager. An existing project can be inserted into the current workspace.

## 4.1 Create new project

There are two methods for creating a new project:

- **Drop-down list -> File ->New project** or

- **Context menu** of the entry workspace in the project tree / entry **Project new**



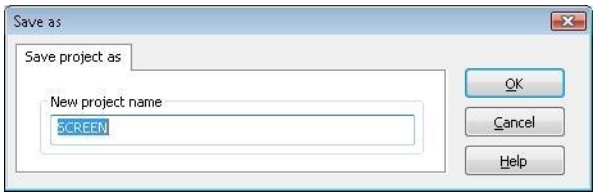

| Parameter | Description |
|---|---|
| **Project type** | Choose between standard project and global project (on page 21). |
| **Project name** | Choose a name for the project.<br>Allowed are: Numbers, letters and the special underscore character (_).<br>Default:*PROJEKT* |
| **Base folder** | Folder in which the new project should be saved. |
| **Workspace** | Selection of the workspace (on page 6):<br>- Add to active workspace:<br>The new project is added to the workspace that is currently active. As default saving location, the workspace folder is suggested.<br>- Create new workspace:<br>Together with the project a new workspace so created. The name of the workspace is automatically added to the Runtime folder field. |
| **Workspace name** | Choose a name for your new workspace.<br>Allowed are: Numbers, letters and the special underscore character |

| Parameter | Description |
|---|---|
| | (_).<br><br>**Note:** The default name <Workspace> is invalid and must be replaced. |
| **Runtime folder** | The default storage space for the Runtime folder is already preset. The memory area can be changed here.<br><br>**Note:** Below the Runtime folder the data folder for the Runtime files is automatically created. The folder can be individually changed via the **General/Data folder** property. Pay attention that the folder can always be reached. Otherwise the Runtime data cannot be written anymore. |
| **Options** | |
| **Multi-user project** | Active: Several users can work on the same project at the same time (for details see distributed engineering). |
| **Project server** | Selection of the project server for multi-user projects. |

## 4.2 Save project

In order to save a project under a new name, select the **Project / Save as** entry from the context menu of the project. You can enter the new project name in the following dialog.

If you want to use an already existing name, you will receive an according message.




### Information

With this functionality e.g. it is possible to create a copy of the existing project, which the can be edited independently.

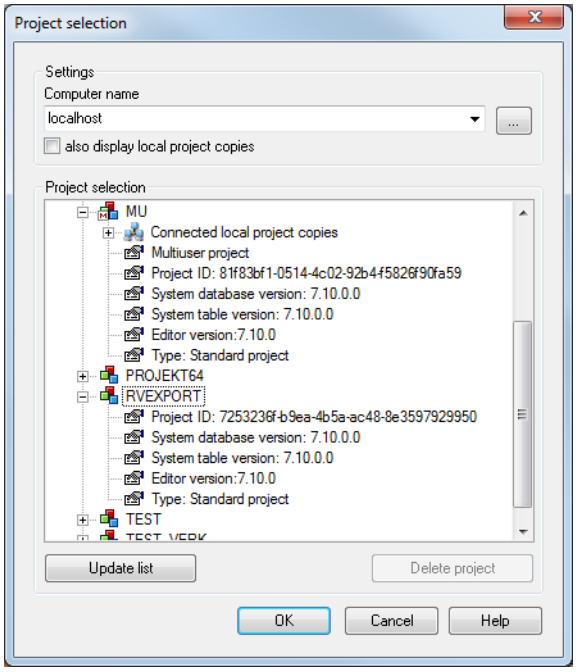
For this Project A is copied with Save as from the context menu and then can be edited. Then it is saved and Project B (again context menu - Save as).

Depending on how much the two projects differ, this can save mor time than exportint/importing project parts.

## 4.3 Insert project into workspace

To insert an existing project into a workspace:

- right-click on the workspace
- Select the Insert existing project command
- the dialog for selecting projects will be opened



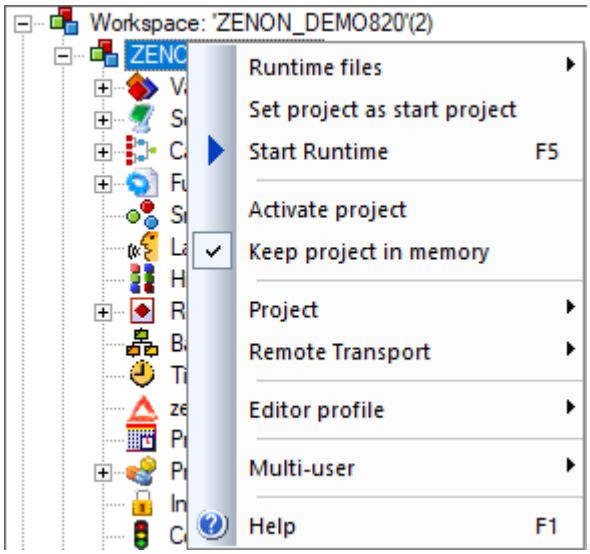

To obtain detailed information on the individual projects, in particular in respect of type, open the project nodes in the selection window. You receive information on:

| Information | Description |
|---|---|
| **Multiuser project** | Only displayed if the project is capable of distributed engineering. |
| **Project ID** | Unique project ID. |
| **System database version** | Version of system database |
| **System report version** | Version of system table |
| **Connected local project copies** | Display of project copies on other computers.<br>Only for multi-user projects (labeled with the letter M in the symbol). |

| Information | Description |
|---|---|
| **Editor version** | Version of the Editor with which the project was created or last edited. |
| **Type:** | Displays project type:<br>▸ *Standard project*<br>▸ *Global project* |

## 4.4 Edit existing project

Selection of an existing project is done by selecting the project in the Project Manager by clicking on it with the left mouse button. The right mouse button opens the following context menu.




The following commands are available

| Parameter | Description |
|---|---|
| **Runtime Files** | Opens the context menu entries for the context menu **Runtime Files**. |
| **- Create changed data** | Creates changed Runtime files for the active project |
| **- Create all** | Creates all Runtime files for the active project |
| **- Import** | Files that can be edited in the Runtime are read back to the Editor path<br>-Standard recipes<br>- Recipes of the Recipegroup Manager<br>- User administration |

| Parameter | Description |
|---|---|
| | - Schedules and profiles |
| **- In the Runtime changeable data...** | Opens the **Project Settings** dialog and enables settings for creating, transferring and decompiling Runtime data to be changed. |
| **Project as start project** | Sets the Runtime Startproject for the current computer |
| **Start Runtime** | Runtime is started with the project defined as start project. |
| **Project active** | Set active project for the toolbars of the Editor and the cross reference list.<br>All other projects, not marked as "Keep project in memory", are deactivated |
| **Keep project in memory** | The project stays in the memory, even if another project is activated |
| **Project** | Opens the context menu entries for the context menu **Project**. |
| **- Rename...** | Rename selected project.<br>Not available for subprojects. |
| **- Save project as ...** | Saves the project under a new name in a new directory. |
| **- Replace project preferences** | Opens the **Settings** dialog for replacing project references for copied projects. |
| **- Properties** | Opens the properties window with the project properties. |
| **- Remove from workspace** | Removes the project from the current workspace, but does not delete it physically. |
| **- Delete** | Deletes the project physically. |
| **Remote Transport** | Opens the context menu entries for the context menu **Remote Transport.** The **Project Remote Transport** submenu offers the following functions: |
| **- Establish connection** | Initiates remote connection to target computer. |
| **- Transport changed Runtime files** | Transports only changed runtime files to target computer. |
| **- Transport all Runtime files** | Transports all runtime files to target computer. |

| Parameter | Description |
|---|---|
| **- Read back all engineered Runtime folders** | Files which can be edited in the Runtime (e.g. recipes, user administration etc.) are read back to the Editor files |
| **- Project as start project** | Set start project for target computer. |
| **- Start Runtime** | Starts Runtime on target computer. |
| **- Stop Runtime** | Stops Runtime on target computer |
| **- reload project** | Executes function **Reload** on target computer(Runtime device). |
| **- Get error file** | The error file is requested from the target computer. |
| **- Restart OS** | Restarts operating system on target computer. |
| **- Get system status** | Get system status of target computer. |
| **- Remote password change** | The password for the remote access to the project computer is changed. |
| **Editor profile** | Opens a submenu in which a created profile can be selected. |
| **Multi-user** | Opens the context menu entries for the context menu **multi-user**.<br><br>**Note:** Entries in this context menu are only available for a multi-user project. More information can be found in the **Distributed Engineering** manual. |
| **- Synchronize** | Synchronizes all content of a multi-user project with the latest project content. |
| **- Activate offline mode** | Switches a multi-user project into offline mode. The project type is retained. In order to transfer changes to the multi-user project, the project must be switched back to online mode.<br><br>**Attention:** Changes can only be transferred to the server project in online mode. |
| **- Activate online mode** | Switches a multi-platform project back into online mode.<br><br>**Note:** This entry is only available if offline mode has been activated for a multi-user project. |

| Parameter | Description |
|---|---|
| **Help** | Opens online help. |

### PASSWORD PROTECTION

Each project can be protected with a password. To do this:

- Create the required users in the user administration
- In **User Administration** in project properties, in the **Function authorizations** property, set the **Load project** entry to an authorization level greater than *0*
- Assign this authorization level to all authorized users

This enables the project to only be opened by existing users with the defined authorization level.

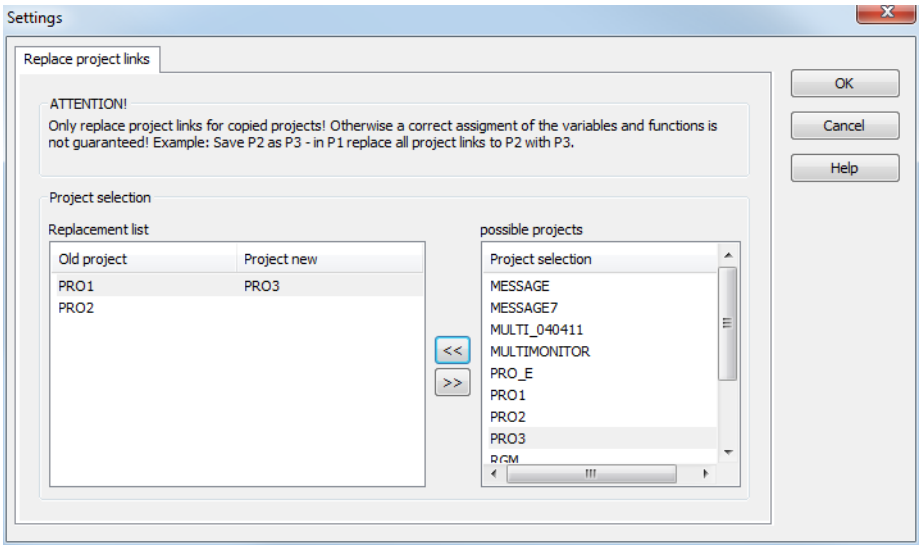
## 4.5 Replace project links

If projects are copied, their links to higher-ranked projects must be assigned newly if necessary. The assistant **replace project links** supports the automatic replacing of project links to screens, variables and functions. The control system searches for all project links, which then are replaced by the screens, variables and functions of another selected project.

To replace project links:

1. Save the workspace and sub-projects.
2. Select the **Replace project references** command in the context menu of the Intergration project (on page 17).
   The dialog for selecting a project opens.
3. Select the desired allocations.

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




| Option | Description |
|---|---|
| **Replacement list** | List of project allocations for replacing links:<br>▸ Old project:<br>Contains all source projects used in the project. If this list is empty, the selected project has no reference to other projects.<br>▸ New project:<br>Project in which the links should be adopted. Selection from list of possible projects by clicking on the arrow button.<br>**Note:** If a linked project is replaced, the new project must be an exact copy of the old project. Otherwise it can create incorrect links. |
| **possible projects** | Projects with which source projects should be replaced. Selection:<br>▸ highlight desired old project<br>▸ highlight desired new project<br>▸ click on button with arrow to the left<br>Cancel allocation:<br>▸ highlight desired allocation in the replacement list<br>▸ click on button with arrow to the right |

| Option | Description |
|---|---|
| **OK** | Take over allocation and carries out replacement.<br>Number of replaced project links is displayed in the ouput window. |
| **Cancel** | Discards settings and closes the dialog. |
| **Help** | Opens online help. |

## 4.6 Save and reload project

Information about saving and reloading projects can be found in the chapter project backups.

## 4.7 Remove project from workspace

To remove a project from the workspace, choose the entry **Project / remove from workspace** in the context menu of the project.

The project is not deleted after that. See chapter Delete project (on page 17).

## 4.8 Delete project

You can find more information about deleting projects in the chapter project backups / Deleting projects.

# 5 Integration project

zenon offers the possibility of a multi-hierarchical project structure. In such a case an integration project with several sub projects is realized.

As a central station the integration project contains overview screens, where process values of subprojects can be displayed.

Details: see the **Multi-project administration** chapter in the **Network** manual.

Example

With the recipes in the integration project set values can be administered centrally in order to control the single projects in the best way.

With project overlapping archives in the integration project data from the subprojects can be collected at a central location.

It is possible to use variables from subprojects in the integration project.

You can find more information on **Replacing project links** in the chapter Replacing project links (on page 15).

**Attention**

Naming templates: Avoid using the same name for templates in integration and subprojects. Because:

- If a template with the same name is already opened, this is then used when the new screen is called up - regardless of which project it belongs to.
- If there is still not a template open with a suitable name, the name of the screen's project is used.

### FILE FOLDERS

Subproject which are located at the same folder node as the integration project during creation, always use the same structure as the integration project. Every sub project is entered into the **project.ini** with relative path to the integration project. If the Runtime path for the integration project is changed, the paths for the subprojects also change. This guarantees that the Runtime can find the needed paths.

**Note**: You can find more information about this topic in the Network manual in the chapter titled The integration project.

## 5.1 Copying sub-projects

In order to avoid, that after copying the sub-projects the links of the integration project link to the wrong sub-projects, zenon offers the possibility to replace project links or to copy entire workspaces.

The links from an integration project to a sub-project can also be replaced with links to another sub-project without having to create a copy of the integration project.

### 5.1.1 Copying the complete workspace

A copy of the entire workspace is created. For each project a '**Speichern unter**' is executed and a new GUID is generated. But the projects keep their original names. The workspace is autoimatically loaded with the new projects. In this solution the entire integration project is searched for variable and function links, which point to other projects. In these links the GUID of the original project is replaced

by that of the copied sub-project. With this solution the sub-project can be adopted and immediately will run with the new integration project.

## 5.2 Operating authorization

Operating authorizations can be implemented in zenon for projects in the network and for integration projects without a network.

Operating authorizations means that the user can actively intervene in the process, in order to write set values, for example. Even if the integration project itself is not a network project, but it contains network projects, you have the possibility to permit operation of the project consistently on just one station each.

### OPERATING AUTHORIZATION IN THE NETWORK

The operating authorizations in the network are unlocked or blocked using zenon functions on the respective computer. To use the operating authorization in the network:

1. navigate to the **Network** group in Project Properties.
2. In the drop-down list of the **Operating authorization in the network** property, select the type of operating authorization (*Global* or *via equipment model*).
3. Define the **Timeout for request [s]**:
4. Define the **Timeout for operating authorization [s]**:

   **Attention:** Select a time period shorter than the network timeout in the **Timeout [s]** property.
5. Create the **Operating authorization in the network** functions in order to get the operating authorization or to approve this.

For details see the Operating authorization in the network chapter in the Historian manual.

### AUTHORIZATION IN THE INTEGRATION PROJECT

You can even unlock or block operating authorizations in a project without a network. This happens via a local variable that unlocks the authorization for the value *0* and locks it for a value that is not equal to *0*.

To use operating authorizations in an integration project:

1. Create a binary, local variable of **internal driver** in the project.
2. In the project properties of the **Interaction** group, link this internal variable in the **Operation lock** property.
3. Determine the value of the variables for the operating block locally.
   You have the following possibilities for this:

- Function **Write/modify set value**:
  Update the value of the variables using **Write/modify set value** functions that are linked to limit values of the **system variable: [Network] operating authorization present** of the subproject.
- **API.**
- Activate the **Visible externally** property for the variable and update its value using zenon Logic.

**Variable value:**

- *>0*: No operating authorization available
  Runtime reacts as in a network project similarly to as if the operating authorization were not present.
- *0*: Authorization available
  Runtime reacts as in a network project similarly to as if the operating authorization were present.

> **Attention**
>
> Difference to **Operating authorization in the network**:
>
> If an operating lock has been activated via the internal variable, the attempt to write a process value is ignored. In doing so, there is no corresponding notification given to the user.

Not all variables are blocked during the operating block. The variables that are on the computer locally remain operable. The following is applicable for **Intern Driver** variables:

- Internal variables with the *local* setting for the **Calculation** property always remain operable, both in projects with a network and in projects without a network.
- Internal variables with the *network* setting that come from a project without a network are also always operable. This is because the setting for the **Calculation** property without a network has no effect here.

In a network project, the internal values can only be operated with the **Calculation** *network* - like the process variables - depending on the operating authorizations. In detail:

- The variable for the **Operation lock** blocks the operating elements of its own project. No entry is possible. If operation is carried out using screen elements of a different project, the **Operation lock** prevents the final setting of the value.
- The **Operating authorization in the network** function blocks the variables. You can find further information in the **Network** manual in the **Operating authorizations in Runtime** chapter.

**Example:** The integration project is not blocked, the sub-project is blocked. If the variable of the sub-project has been linked to a screen element of the integration project, the user can open the dialog in the integration project, but the edited value is then not applied.

# 6 Global project

A global project is a project that is not connected to a process.

> **Information**
>
> For each workspace you can only create and use one global project.

The global project has a number of modules which are available for all projects in the workspace. If objects exist in the global and in the local project, the objects in the local project take priority.

| Module | Description |
|---|---|
| **Variables -> Alarm** | Grouping of alarms in groups, classes and areas. |
| **Frames** | Frames, that do not exist in local projects are taken over by the Global project. The identification is the name. |
| **Styles** | Styles make it possible to do the following with graphic properties of screen elements:<br>Extract in frames of style groups<br>Administer in style groups<br>To assign them to other elements<br>Styles are always administered in the global object. |
| **Font Lists** | Font lists which do not exist locally are take over from the global project. The identification is the name. Pay attention to the consequences of same names in the global and local project. |
| **Color Palettes** | All palettes of a project must always contain the same amount of colors; the number of colors can therefore differ between a global project and a local project.<br>**Attention:** In the event of conflicts in the Runtime, the local project's color palettes take priority. |
| **Symbol Library** | Symbols are available for all projects of the workspace.<br>Label when linking in the screen: **Global project_[Symbol name]** |

| Module | Description |
|---|---|
| | **Note:** Direct copying from the **symbol library** into the **symbol library in the project** or copying from the project or global project into the **general symbol library** is not possible. |
| **Language file** | Language files are managed in language tables and combined with the file names and key words. Keywords which do not exist in local projects are taken over from the global project. |
| **User Administration** | Users are merged by the identification. Users which do not exist in local projects are taken over from the global project.<br>**Attention:** Users form global projects are displayed in the Runtime in all sub projects but they cannot by changed via the Runtime user administration. |
| **Files** | Files which do not exist in local projects are taken over from the global project. |
| **History of Changes** | Documents all changes in the global project. |
| **Equipment Modeling** | Depicts all levels of a company according to ISA S88 and S95. Is created in the global project and used in the local project. |
| **Project Backups** | For backups of the global project. |

### Information

It is not possible to open the VBA Editor in a global project.

# 7 Definition of the project filter

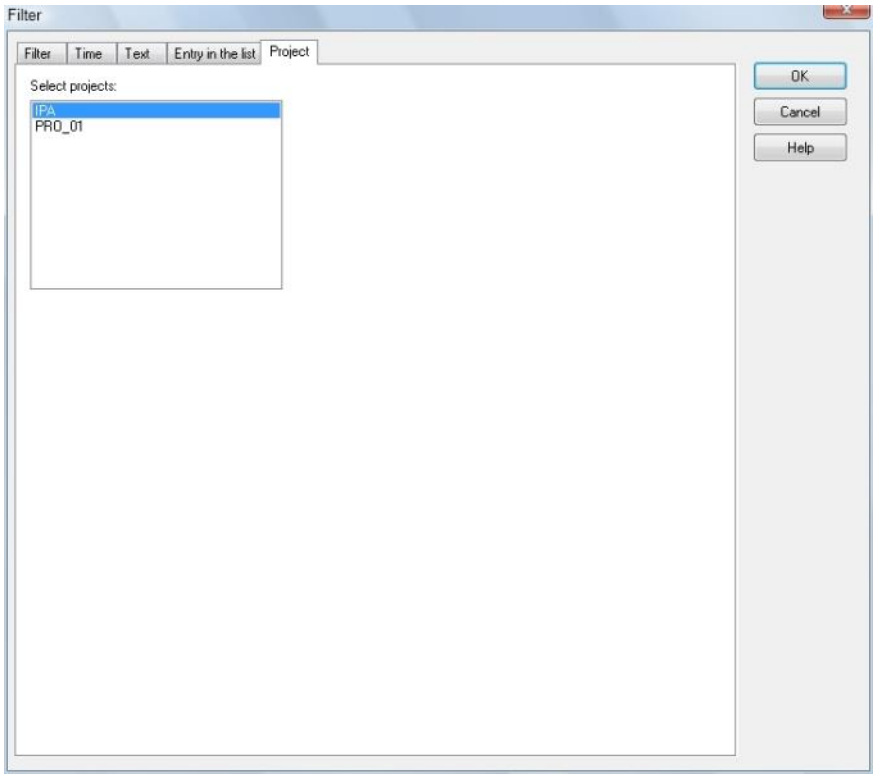
A project filter is used in a number of different functions (screen switch, exporting, printing, lists, etc.). It allows the selection of individual projects in multi-project administration.

### Attention

This filter is only available if several projects are available in an integration project.

**Exception:** With the filter configuration for faceplates, the project filter is also

offered for individual projects.




The selection from the integration project and all sub projects is carried out by means of multi-select, by pressing and holding the **Ctrl key** and clicking the mouse on the desired projects.

# 8 Configuration

The configuration is carried out via:

| Parameter | Description |
|---|---|
| **General configuration** (on page 24) | Open License Manager<br>Standard (on page 24)<br><br>Control panel |
| **Project Configuration** (on page 29) | Project<br>Alarm List<br>Chronological Event List<br>Monitor administration<br>User administration<br>Project backup<br>Rename Project<br>Save Project as... |

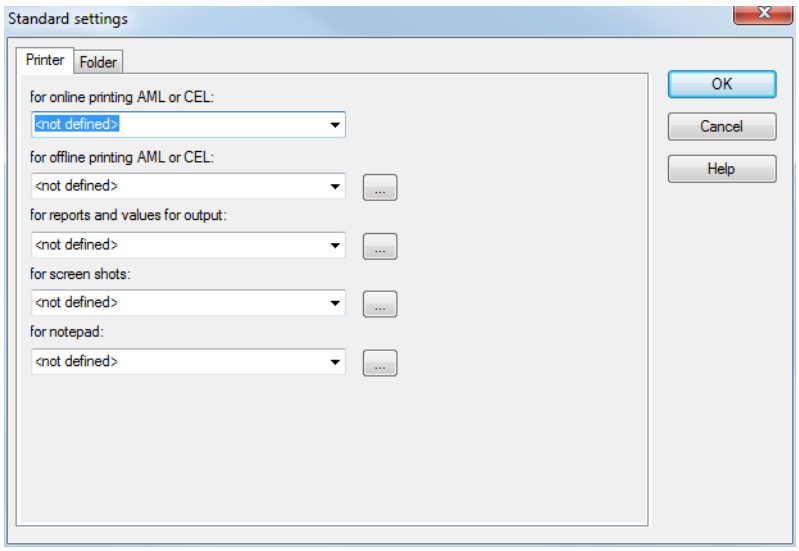
## 8.1 Standard

After selecting the menu entry **File/Standard configuration/Standard** the following not project-specific settings are available:

| Parameters | Description |
|---|---|
| Printer (on page 24) | Global printer settings for all database projects |
| Directories (on page 31) | Definitions for projects being newly created |

### 8.1.1 Printer

Different printers can be configured for the print-out.




#### ASSIGN PRINTER

Printers can be assigned for the following tasks:

| Parameters | Description |
|---|---|
| **for online printing AML or CEL** | Online printer for Alarm Message List or Chronological Event List in the Runtime. Selection if AML or CEL in the project properties in the group **AML and CEL** or over the files *ALAR.FRM* or *BTB.FRM*. |

| Parameters | Description |
|---|---|
| **for offline printing AML or CEL** | Offline printer for Alarm Message List or Chronological Event List by clicking the button **print** in the respective screen. Format configuration in the files *ALARM_G.FRM* or *BTB_G.FRM*. |
| **Values and protocols for output** | Printer for reports and if the function **print the current value** (output of the current values and tables) was selected. |
| **for screenshots** | Printer for screenshots |
| **for notepad** | Printer for general lists. |

To select a printer:

1. Click in the drop-down list.

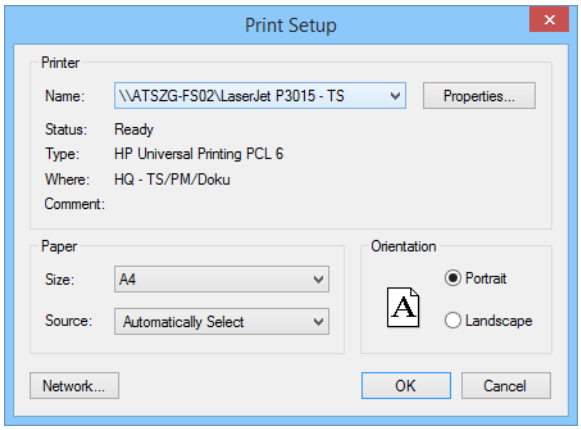
   All printers installed on the computer are displayed.

In order to configure the page view:

1. Click on the **...** button next to the printer.

   The dialog for the page setting will be opened.

## Configure printer




### PRINTER

| Parameter | Description |
|---|---|
| **Printer** | Settings for the printer. |
| **Name:** | Selection of the printer from the drop-down list. The list contains all printers configured in the operating system. |
| **Properties...** | Opens printer configuration dialog. |

| Parameter | Description |
|---|---|
| **State:** | Display printer state. For information only. |
| **Type:** | Display printer type. For information only |
| **Location:** | Display the location of the printer if configured. For information only. |
| **Comment:** | Display comment about printer if configured. For information only. |

### PAPER

| Parameter | Description |
|---|---|
| **Paper** | Configuration of the printout. |
| **Size** | Select paper format from drop-down list. |
| **Source** | Select paper feed from drop-down list. |

### ALIGNMENT

| Parameter | Description |
|---|---|
| **Alignment** | Select paper alignment. Possible parameters:<br>▸ *Portrait format*<br>▸ *Landscape* |
| **Network** | Opens dialog for selecting a printer in the network. |
| **OK** | Applies configuration and closes the dialog. Printing is thus started in the Runtime. |
| **Cancel** | Discards configuration and closes the dialog. This also cancels the printout in the Runtime. |

## Information

For different printer interfaces the same printers can be used with different parameters.

## PRINTING UNDER WINDOWS CE

There is no printer spooler available with Windows CE. The print-out is in the process. The print-out thus also blocks the functionality of Runtime.
Under Windows CE, the print function is not available if it is already included in the CE image. It cannot be subsequently added, nor expanded to further printers.

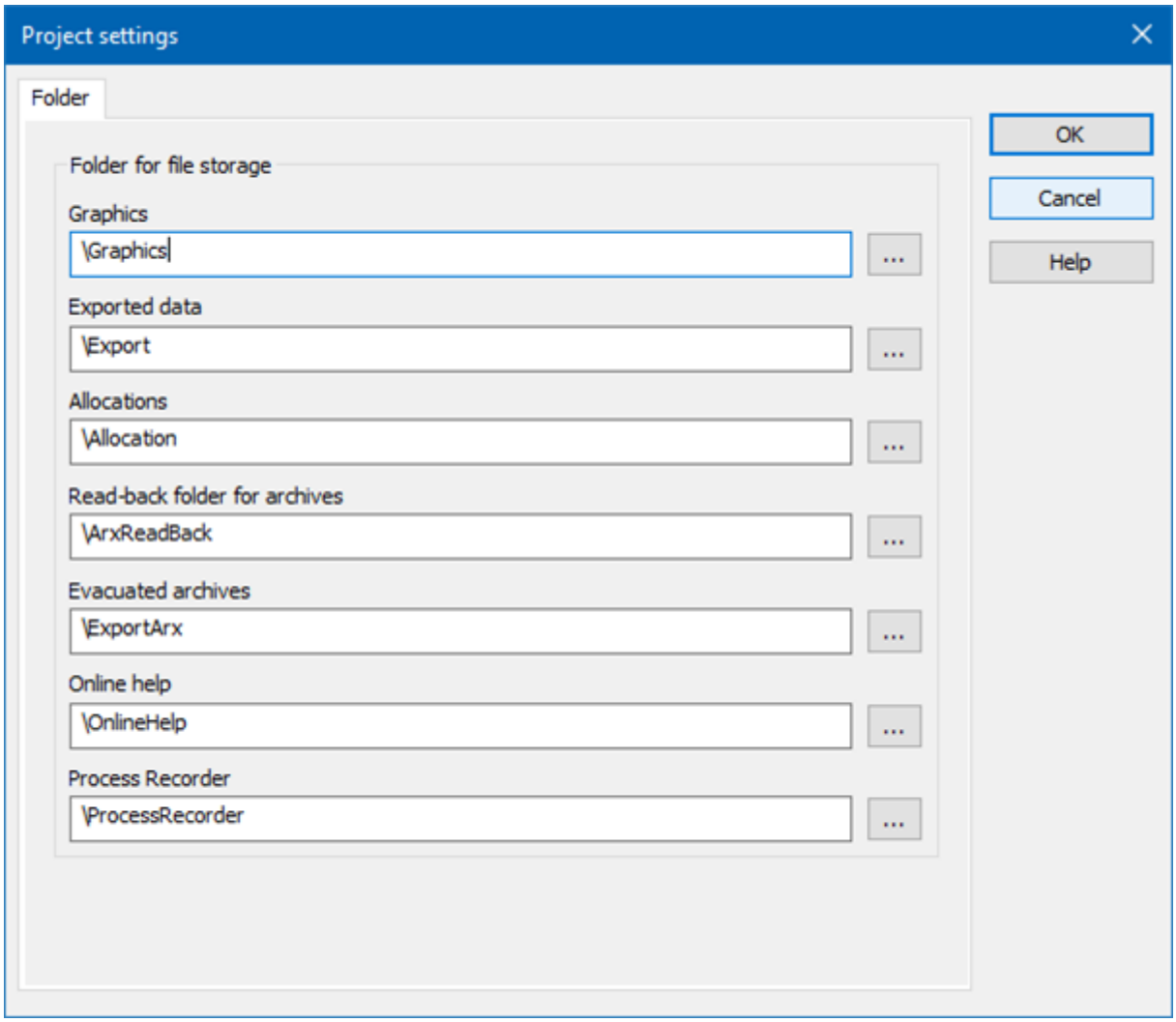
The following is applicable to printing under Windows CE:

- Online printing:
  Printing is always direct to LPT1. This port must always be present on the CE device and a line printer must be connected.
- Offline printing:
  Print-out is always on the standard printer configured on the system.
  The printer cannot be configured from zenon Runtime and cannot be switched.

**Note:** In order for offline printing to work under Windows CE, the manufacturer of the device must provide it in the Windows CE image. There must also be the possibility to define the default printer, for example using applications such as Pocketword or Notepad CE.

## 8.1.2 General folder

In tab **folders** you define the default folders for the categories described below. Click on button **...** to open the Explorer in order to define the storage location for the selected file type. The storage locations defined here are taken over as default for new projects and can be changed in the project settings via option **File storage**. The storage locations are created relative to the Runtime folder.




| Parameter | Description |
|---|---|
| **Graphics** | Graphics Files<br><br>Default:*Graphics* |
| **Exported files** | Path for exported archives, reports, Chronological Event List, Alarm Message List.<br><br>Default:*Export* |
| **Allocations** | Path for project backups. |

| Parameter | Description |
|---|---|
| | Default:*Allocation* |
| **Read-back folder for archives** | Folder for reading back the archive backup files.<br>When loading archive data from the readback folder, the archive data from the Runtime path and from all subfolders of the readback folder is also read.<br>Default:*ArxReadBack* |
| **Evacuated archives** | Folder in which evacuated archives were saved.<br>Default:*ExportArv* |
| **Online help** | Folder for online help.<br>Default:*ONLINE_HELP* |
| **Process Recorder** | Folder in which the evacuated files of the Process Recorder module are saved.<br>Default:*ProcessRecorder* |

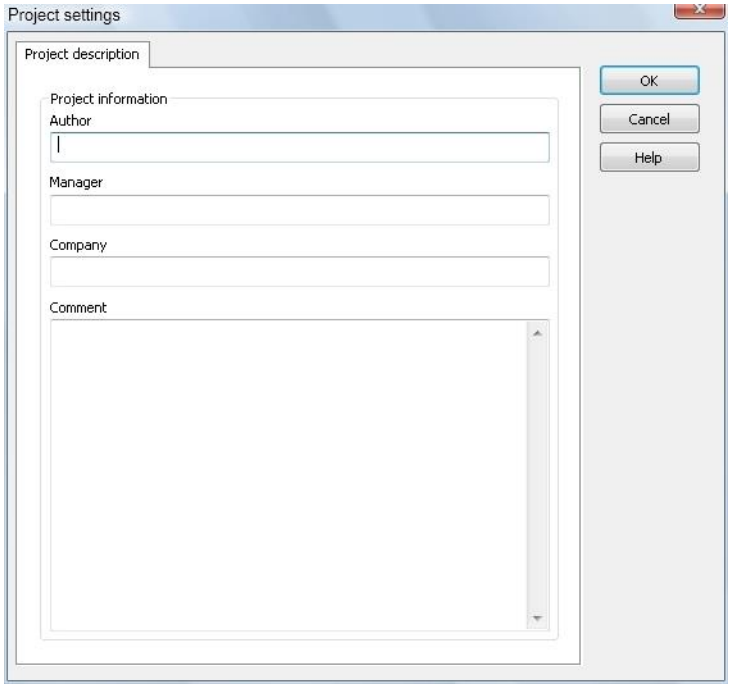
## 8.2 Project manager

In the project project properties all details of a project are configured. The following must be the case in order to be able to configure the properties:

- highlight the project in the project tree
- The properties window must be shown.
  The properties window can be shown:
  - Via the project's context menu
    (*Project* in the context menu, *Properties...* entry)
  - Via the Editor settings
    (*View* menu, *Properties window* entry)

> **Information**
>
> In order for the path for the Runtime folder to be able to be amended for a multi-user project in subordinate projects, the changes must be enabled in the subordinate project.

## 8.2.1 Project info

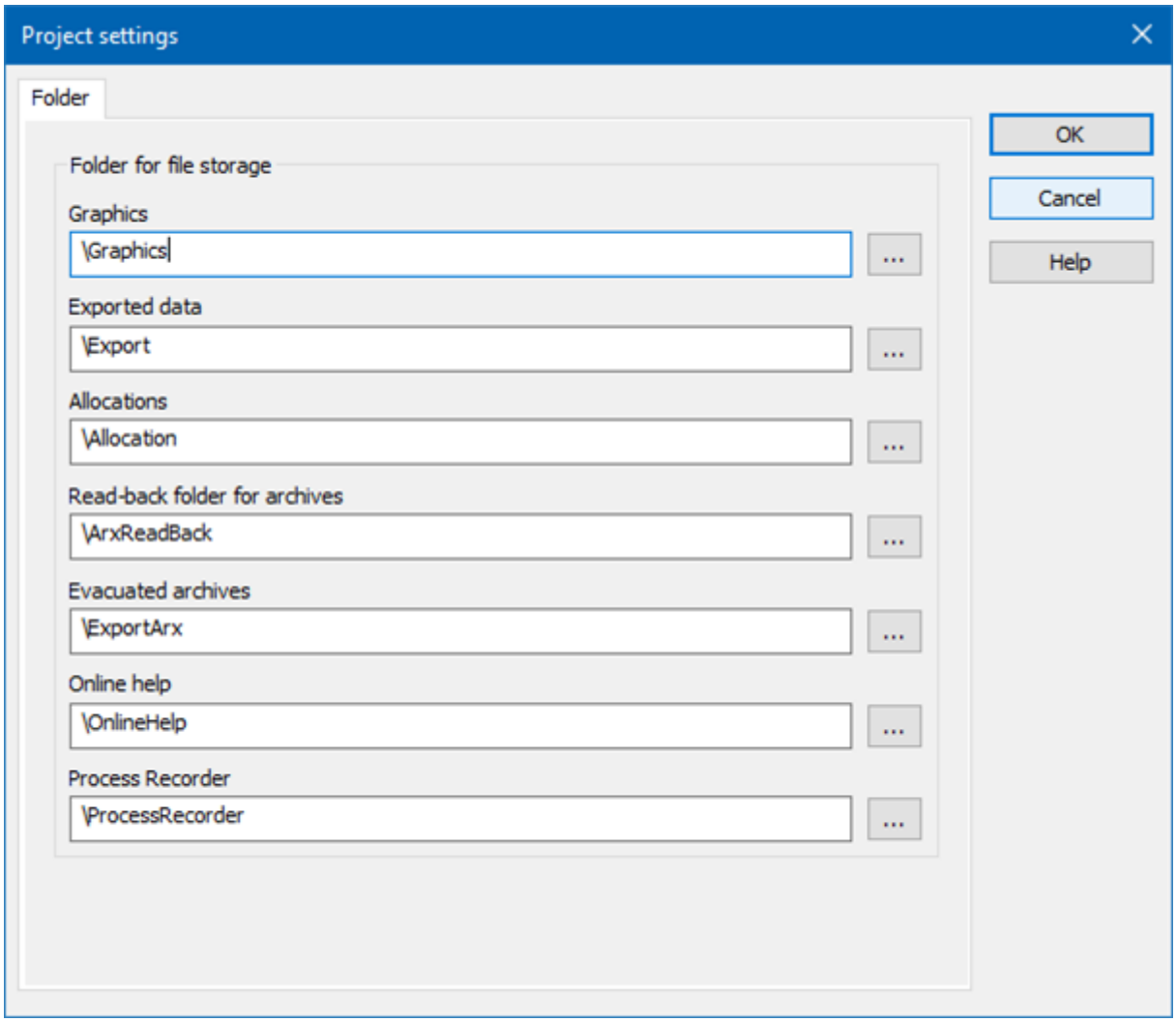



The following information on the project can be defined:

| Parameters | Description |
|---|---|
| **Author** | Author of the project |
| **Manager** | Manager of the project |
| **Company** | Company for the project |
| **Comment** | Free comment for the project |

## 8.2.2 Project-related folder

By selecting property **File storage** in project settings **General**, the dialog for defining the storage location is opened. The already existing locations were taken over from general settings for folders (on page 28). Click on button **...** to open the Explorer in order to define the storage location for the selected file type. The storage locations are created relative to the Runtime folder.




| Parameter | Description |
|---|---|
| **Graphics** | Graphics Files<br><br>Default:*Graphics* |
| **Exported files** | Path for exported archives, reports, Chronological Event List, Alarm Message List.<br><br>Default:*Export* |
| **Allocations** | Path for project backups. |

| Parameter | Description |
|---|---|
| | Default:*Allocation* |
| **Read-back folder for archives** | Folder for reading back the archive backup files.<br>When loading archive data from the readback folder, the archive data from the Runtime path and from all subfolders of the readback folder is also read.<br>Default:*ArxReadBack* |
| **Evacuated archives** | Folder in which evacuated archives were saved.<br>Default:*ExportArv* |
| **Online help** | Folder for online help.<br>Default:*ONLINE_HELP* |
| **Process Recorder** | Folder in which the evacuated files of the Process Recorder module are saved.<br>Default:*ProcessRecorder* |

### 8.2.3 Graphics quality

In zenon the quality of the displayed graphics can be tuned to the resources for the system. This setting is made using the project setting **Graphics quality** in group **Graphical design**. These settings only have an effect on Runtime. *DirectX* is always used in the Editor.

Possible options are:

- *Windows Basic*: Basic graphics settings. Recommended for resource-weak hardware.
- *DirectX Software*: Graphics calculations are done by the CPU. Depending on the graphic you can use more than one CPU. Using *DirectX Software* may cause a high CPU workload.
- *DirectX Hardware*: A part of the graphic calculation is done by the graphics card by which the performance is increased. If this setting is not supported by the system used, zenon automatically switches to *DirectX Software*. In principle, *DirectX Hardware* is preferable and *DirectX Software* should only be used if necessary.

**Attention**

- **DirectX** is not available under Windows CE.
- **DirectX** cannot be used for **OCX**.

## DIRECTX

**DirectX** allows a higher quality of graphics than *Windows Basic*.

To be able to use **DirectX**, several requirements must be fulfilled:

| Requirement | Description |
|---|---|
| *DirectX Hardware* or *DirectX Software* must be activated. | In the project settings you must select *DirectX Hardware* or *DirectX Software* for property **Graphical design**. |
| The operating system must support *DirectX 11.1*. | *DirectX hardware* and *DirectX software* only works on operating systems that support *DirectX11.1*.<br>If the system does not support *DirectX 11.1*, it automatically switches to *Windows Enhanced*.<br>The current *DirectX*- Runtime must be installed. For zenon it is installed together with the setup. For the zenon Web Client it must be installed manually. |
| The screen or element must support *DirectX*. | Only supported elements or screens can be displayed with *DirectX*. |
| For *DirectX Hardware* the minimum requirements must be fulfilled. | You can find details on the minimum requirements in the *System requirements when using DirectX*. If they are not met, it automatically switches to *DirectX Software*.<br>If the operating system does not provide any hardware acceleration (e.g. Remote Desktop), it may not be possible to use *DirectX Hardware*. |

## DIRECTX 11.1

The following is applicable with regard to the operating system when using DirectX 11.1:

- Windows 8 or higher:
  DirectX 11.1 is available natively.
- Windows 7 SP1 and Server 2008 R2 SP1:
  A Windows service pack must be installed.
- Windows 7 and Server 2008 R2 without service pack and lower:
  DirectX 11.1 cannot be used.

### INSTALL SERVICE PACK FOR WINDOWS 7 SP1 AND SERVER 2008 R2 SP1

To install the Service Pack:

1. Download the platform update KB2670838 from the Microsoft support website.

2. Select the version that corresponds to your operating system:
   - 32bit
   - 64bit
3. Execute the corresponding installation file.

**Note:** This only concerns Windows 7 SP1 and Server 2008 R2 SP1. DirectX 11.1 is already present on more recent versions. The update cannot be installed on older versions.

### 8.2.3.1 DirectX: Error Handling

Errors are output in the Diagnosis Viewer.

#### DIRECTX IS NOT INITIALIZED.

If DirectX cannot be initialized during the call up of a screen or in continuous operation, an attempt is made to initialize DirectX again. During this process, zenon Editor and Runtime continue to run normally. You can attempt to rectify the problem in this time. Possible causes and solutions can be found out with the Diagnosis Viewer.

A progress bar appears during reinitialization. To cancel the reinitialization:

1. Click on the **Cancel** button.
2. Confirm the error message that is shown to you.
3. Depending on whether you have canceled the process, either the editor or Runtime is ended.

**Note:** Errors that make reinitialization of DirectX impossible are announced by means of an error message.

#### DIAGNOSIS VIEWER

DirectX provides individual messages in the Diagnosis Viewer with:

- an error message.
- possible reasons for the error,
- error codes.

The display take place in an own module **DirectX**. For errors, the error text is displayed in the **Error** text field; for warnings and debug information, the corresponding messages are displayed in the **General** text field:

- For the successful call up of a screen at least one DEBUG success message is displayed.
- Warning point out events which can influence the operation.
- If an error occurs which cannot be fixed, an error message is displayed.

> **Information**
>
> If a message is not completely displayed in the table in the Diagnosis Viewer, open the entry via double click to display the whole message.

#### CHECK LIST FOR ERROR CHECKING

A check to see whether DirectX is working can be carried out by activating the debug messages in the Diagnosis Viewer. A corresponding message is shown if the check is successful.

- Are DirectX-specific warnings or error messages displayed in the Diagnosis Viewer?
- Is *DirectX Hardware* or *DirectX Software* set in the **Graphics quality** project property?
- Are the minimum requirements for DirectX met? You can find details on the minimum requirements in the *System requirements when using DirectX*.
- Is DirectX supported by the screen or the element?
- Does the display with *Windows Basic* work properly?
- Does the display work with another driver?
- Does the display work with a graphics card of another manufacturer?

### 8.2.4 Files that can be changed in Runtime

There are different data which can be changed in the zenon Editor as well as in the Runtime. These are files for:

- Recipegroup Manager
- Standard Recipes
- User administration
- Scheduler

#### PROTECT RUNTIME FILES FROM OVERWRITING

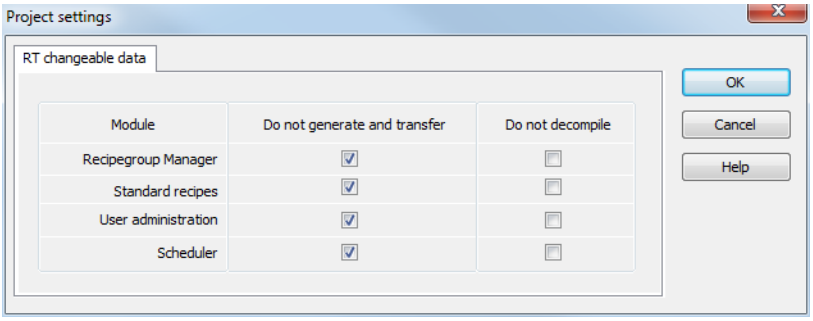
If Runtime files are transferred again, this process also overwrites the files amended in Runtime. To prevent the overwriting of content of the running Runtime, module content can be excluded from a transfer to Runtime. To do this, activate, in the dialog of the **Runtime changeable data** property (**General** project properties group) in the **Do not generate and transfer** the content of the configuration whose files have not been recreated or transferred to Runtime.

## PROTECT EDITOR FILES FROM OVERWRITING

Data changed in the Runtime can be read back. In this case the corresponding Editor data are overwritten. In order to avoid unwanted overwriting the files, that should not be read beack, can be selected here in the section **Do not decompile**.

## DIALOG OF FILES THAT CAN BE CHANGED IN RUNTIME

You can reach the dialog for configuring the Runtime changeable files via project settings **General/Runtime changeable data**:




The following file types can be selected:

| Parameter | Description |
|---|---|
| Recipegroup Manager | Recipe groups and recipes of the Recipegroup Manager. At the transfer new files are transferred and new sub-folders are created, deleted files and sub-folders are also deleted on the target system. |
| Standard Recipes | Standard recipes. |
| User Administration | User administration for login and rights administration in the Runtime. |
| Scheduler | Changes in the time models and schedules of the PFS. |

### Attention

At the project conversion take care that Runtime changeable files are also converted. For this Runtime files must be imported to the Editor and after the Update copied back to the Runtime. For details see chapter Recommended procedure for converting Runtime files in manual project conversion.

## TRANSFERRING THE FILES

### IN THE RUNTIME

To transfer files to the Runtime:

1. all files can be transferred
2. only changed files can be transferred

Both possibilities consider the files defined in property **Runtime changeable data**.

**Hint:** Use the **Network Topology** view in Editor when transferring files. This way all of the required Runtime files for all target systems are created collectively and only then transferred to the target systems when selected by multiple selections.

### FROM THE RUNTIME

To read files from the Runtime, there are two processes available:

1. Restore all Runtime files:
    a) reads back all Runtime files in the folder which was defined in property **Runtime folder**
    a) regardless of the settings of property **Runtime changeable data**
2. Import Runtime files:
    a) imports the files defined in property **Runtime changeable data** and
    b) replaces the engineering in the Editor by these Runtime files
    c) is suitable for taking over data from a remote system in the Editor

### CONNECTION ERROR

During the transfer existing data are overwritten in accordance with the settings.

If errors occur at the transfer from or to the Runtime or if the connection fails, the files must be retransferred completely.