zenon manual

Monitor administration

v.8.00

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Contents

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2. Monitor administration

The monitor administration makes it possible to easily organize several monitors.

The tasks of the monitor administration are:

▶ **Operation:** Mixed operation of single-monitor and multi-monitor systems.
For example, three monitors are used in a control room, two are used on a client and the maintenance technician's notebook only has one monitor.

▶ **Screen output:** Free output of a screen on any monitor and changing of the assignment of a screen -> monitor in the Runtime.
All screen types (such as AML, menus) and functions (such as screen acknowledgement), that are assigned to this screen or this screen are accepted automatically.

▶ **Adjusting the resolution:** Inclusion of computers with different resolutions in one project.
For example: The monitor resolution when configured is 1680 x 1050. The resolution on the target device is 1024 x 768. In this case, zenon automatically adapts the resolution correctly, but the circles become elliptical due to the different aspect ratio. So it is possible to correctly define the target resolution for the Runtime in the monitor administration.

> 💡 **Information**
>
> *The minimum recommended resolution in Runtime is 1024 x 768 pixels. Smaller resolutions can also be configured. However it may then not be possible to operate some online dialogs. This only affects a few dialogs. If these are not used, the resolution can be selected as lower.*

SETTINGS IN ZENON AND WINDOWS

Monitor administration is configured and administered separately in the Editor for each project. It has an effect on frames and screens in zenon. It is recommended that the size of the frame is adjusted to the size of the monitor displayed or the monitors to be displayed. Larger frames protrude into other monitors or are not shown in full.

Dialog boxes - even those in zenon - are subject to the Windows settings.

> ⚠ **Attention**
>
> *For multi-project administration, the settings of the integration project are always applicable in Runtime.*

3. Concept and requirements

Screens are switched to virtual monitors using monitor administration. Virtual monitors are assigned using real existing monitors. This assignment can be set individually using monitor profiles. Projects can therefore be individualized for different configurations.

The monitor administration is based on:

▶ Fixing the default resolution for a project.
For example, 2048 x 768 for two monitors with a resolution of 1024 x 768 each.
This is set and fixed for Runtime (on page 8).

- ▶ Naming of real existing monitors.

- ▶ Definition of virtual monitors that are assigned to the real existing monitors.
  With the virtual monitors, it is possible to display a 3-monitor system (3 real and 3 virtual monitors) on a single-monitor system (1 real and 3 virtual monitors), for example.

- ▶ There is the possibility to amend the assignment of virtual monitors to real existing monitors in the Editor and in Runtime.
  A virtual monitor can therefore be moved to a different real existing monitor instead of the configured one, for example.

- ▶ Overview window (on page 26) with a screen or monitor overview.
  This makes it possible to quickly select a monitor by selecting the desired screen area in the window. This can also be carried out with optional scrollbars.

PROCEDURE

When using several monitors:

- ▶ Screens are allocated to virtual monitors in screen switching

- ▶ Virtual monitors can be allocated to real existing monitors as desired

The project can therefore be correctly displayed on different systems with a different amount of monitors with no need for reconfiguration
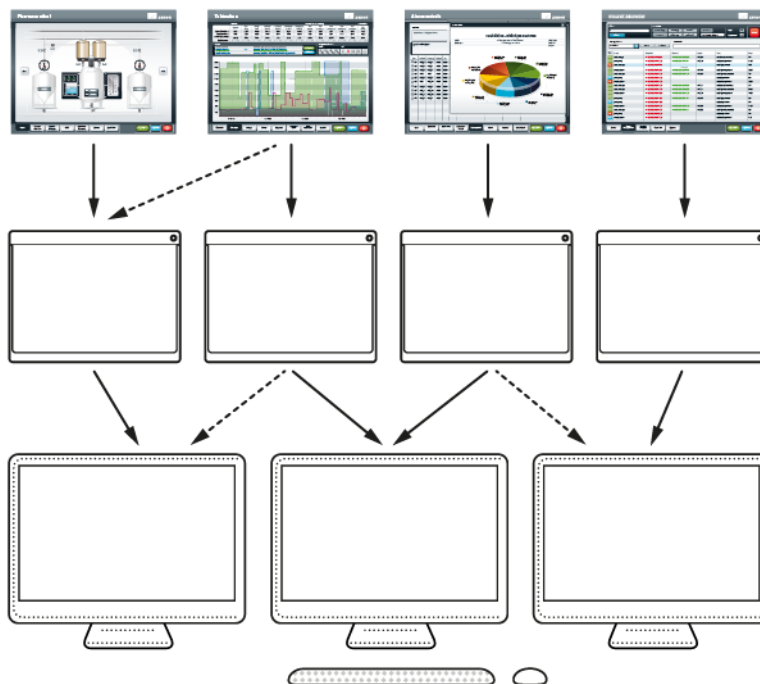
ENGINEERING

The monitor configuration has different effects:

▶ New projects (on page 10)

▶ Existing projects (on page 10)

Recommended workflow: With a new project, set up the monitor administration first before you define frames and screens. Start by determining the resolution for Runtime (on page 8).

> ⚠ **Attention**
>
> *Note when configuring the project:*
>
> ▶ For the optimal display of zenon in Runtime, the standard setting (corresponds to `100%`) is recommended for the Windows **display**. Higher values can lead to graphic elements, symbols, texts, etc. not being displayed correctly.
>
> ▶ Windows themes can overlay elements in Runtime. Ensure, when configuring a project, that there is an appropriate distance from the elements to the screen edge.

▶

3.1 Requirements for the Runtime

The real existing monitor resolution has to be entered in `zenon6.ini` to ensure that the monitor administration works correctly in a multi-monitor system.

Exception: these settings are not necessary for zenon Web Client.

INI ENTRIES

The following entries are necessary in the `[DEFAULT]` area:

▶ The entries **RT_CXMAINFRAME** and **RT_CYMAINFRAME** define the resolution of the size of the main window (sum of all monitors) in pixels.

▶ The entries **RT_CXRESOLUTION** and **RT_CYRESOLUTION** define the reference resolution (resolution of the primary monitor) in pixels for the adaptation of the resolution to the target computer in Runtime.

| Entry	Meaning
`[DEFAULT]`	Section where the entry is made.
SCREENPROFILE=	Selected monitor profile for current computer. Name of the configuration. For example: **ScreenProfile=**Standard Is defined on the configuration computer by means of Configuration of general settings (on page 12). This may need to be defined on other computers by means of a manual entry in zenon6.ini.
RT_CXMAINFRAME=	Width of the resolution of all monitors For example, for two screens with a width of 1280 pixels each: **RT_CXMAINFRAME=**2560
RT_CYMAINFRAME=	Height of the resolution of all monitors Attention: If the windows toolbar is shown, its height must be considered.
RT_CXRESOLUTION=	Width of the resolution of the target computer in Runtime in pixels, depending on the value of the **RT_CXMAINFRAME** property.
RT_CYRESOLUTION=	Height of the resolution of the target computer in Runtime in pixels, depending on the value of the **RT_CYMAINFRAME** property.

⚠ **Attention**

The following configurations can lead to nothing being displayed or images only being displayed on the first screen:

▸ If the values are greater than the area that is actually available, it is possible that nothing will be displayed.
Solution: Correct the data in the INI file.

▸ If the Windows task bar is displayed in a fixed position, screens may only be displayed on the first monitor.
Solution: Set Windows task bar to **Hide task bar automatically**.
Or: Define RT_CYMAINFRAME in such a way that it is not displayed in the task bar, for example: **RT_CYMAINFRAME=**1024 instead of 1280.

EXAMPLE

A project was configured for monitors with the resolution 1920x1080.
The project is to be adapted to monitors with a resolution of 1024x768.

Resolution of target computer: Monitor 1 and monitor 2: 1024x768

RT_CXMAINFRAME= 2048

RT_CXRESOLUTION=1024

RT_CYRESOLUTION=768

1024 x 768
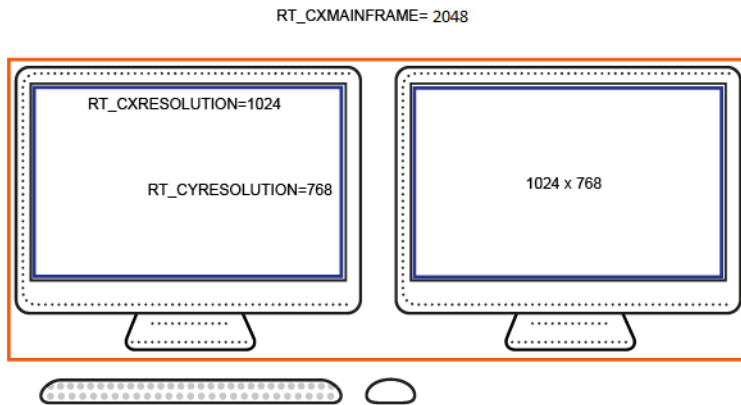
To do this, the entries in **zenon6.ini** must be set as follows:

▶   **RT_CXMAINFRAME**=2048

▶   **RT_CYMAINFRAME**=768

▶   **RT_CXRESOLUTION**=1024

▶   **RT_CYRESOLUTION**=768

3.2 New project

Define the screen resolution before you start configuration. This resolution should not be subsequently changed, as this can lead to stretching of the screens if the width:height ratio of the resolutions is not the same.

When a new project is created, the screen resolution for the monitor administration is automatically adjusted to the current screen resolution. If a project is to run on a computer with a different resolution, adjust the settings before starting the configuration.

To be able to assign screens from different real existing monitors (on page 18) in a different combination, you define as many virtual monitors (on page 19) accordingly.

3.3 Adapt existing project

If changes are made to monitor administration in existing projects, all screen switching must be adapted.

However, monitor administration can have advantages for existing products. For example:

▶   Suppression of double screens for different resolutions

▶ Integration of computers with different numbers of monitors in one network project
In order to keep the change effort low, you should use an overview window (on page 26) to integrate computers with only a few monitors. This way, all monitors can be selected quickly.

4. Engineering in the Editor

In the Editor, you define the administration for:

▶ New projects (on page 10)

▶ Existing projects (on page 10)

To configure the monitor administration display:

1. Navigate to the **Graphical design** node in the project properties.

2. Click in the **Runtime general** subgroup in the **Monitor administration** property.

   The configuration dialog is opened.

3. Define the general settings (on page 12).

4. Define the individual settings (on page 15) for different profiles.

> ⚠ **Attention**
>
> *The frame coordinates for absolute positioning always relate to the upper left corner of the main screen. This must be the monitor that is the furthest to the left.*

You can find an example for the configuration of a project with different monitor settings in the example configuration (on page 29) section.

Note for Multi-Project Administration

Note the following when configuring monitor administration for integration projects:

▶ Configure the monitor administration the same for all projects in multi-project administration.

▶ Configure the resolution that is available on the productive system.

▶ Only use the **Adjust to monitor resolution** option for standalone projects or if all projects are configured identically.

4.1 General settings

Dialog for configuration of the general monitor properties:
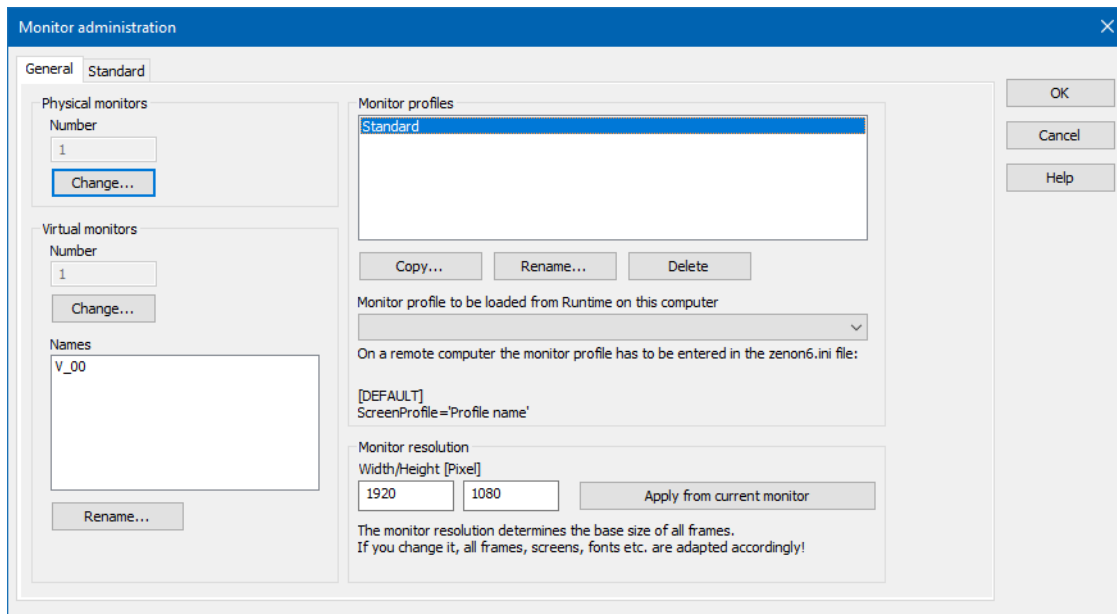
REAL EXISTING MONITORS

Property	Description
Real existing monitors	Number of real existing monitors (hardware). You adjust the settings for the monitors on the profile pages (see Individual settings (on page 15) and Configuration of real existing monitors (on page 18)).
Number	Shows the number of currently defined real existing monitors.

VIRTUAL MONITORS

Property	Description
Virtual monitors	Number of virtual monitors. You adjust the settings for the monitors on the profile pages. (see Individual settings (on page 15) and Configuration of virtual monitors (on page 19)).
Number	Displays the number of currently defined virtual monitors as V_00 to V_nn. The first real existing monitor is configured as the default monitor by zenon.
Change	Clicking on the button opens the dialog to configure the number of virtual monitors.
Names	List of the names of virtual monitors.
Rename...	Opens dialog to rename virtual monitors. Free text input with a maximum of 15 characters.

⚠ **ATTENTION**

The first virtual monitor is configured as the default monitor by zenon.

MONITOR PROFILES

Property	Description
Monitor profiles	Defines central monitor profiles for the Runtime. Each monitor profile has its own tab for individual configuration (on page 15). The configuration of monitor profiles for other computers may need to be carried out manually by means of an INI entry (on page 8).
Copy...	Creates a new profile based on the selected profile and opens the dialog for entering a name.
Rename...	Opens the dialog for renaming a profile.
Delete...	Deletes the selected profile without confirmation.
Monitor profile which is loaded by the Runtime on this computer	Opens the drop-down list for selecting the profiles which should be used in the Runtime. Note: On a remote computer, you may have to enter the profile in the file **zenon6.ini** manually:

MONITOR RESOLUTION

Property	Description
Monitor resolution	Resolution in which the project is carried out in the Runtime. (see also Requirements for Runtime (on page 8) chapter) Hint: Define these settings before you start engineering the project. Changes later on can cause distortion in the display if the relation width/height does not fit the resolution! Standard: Resolution of the current computer.
Apply from current monitor	Applies the resolution of the currently active monitor as resolution for the monitor profile.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

DEFINE THE MONITOR PROFILE ON THE RUNTIME COMPUTER

If you have only the Runtime and not the Editor installed on a computer, you can define the desired monitor profile as follows:

1. Open the file `zenOn6.ini` with a text editor.

2. Navigate to the **[DEFAULT]** section.

3. Add the following entry:
   ScreenProfile=name of the monitor profile.
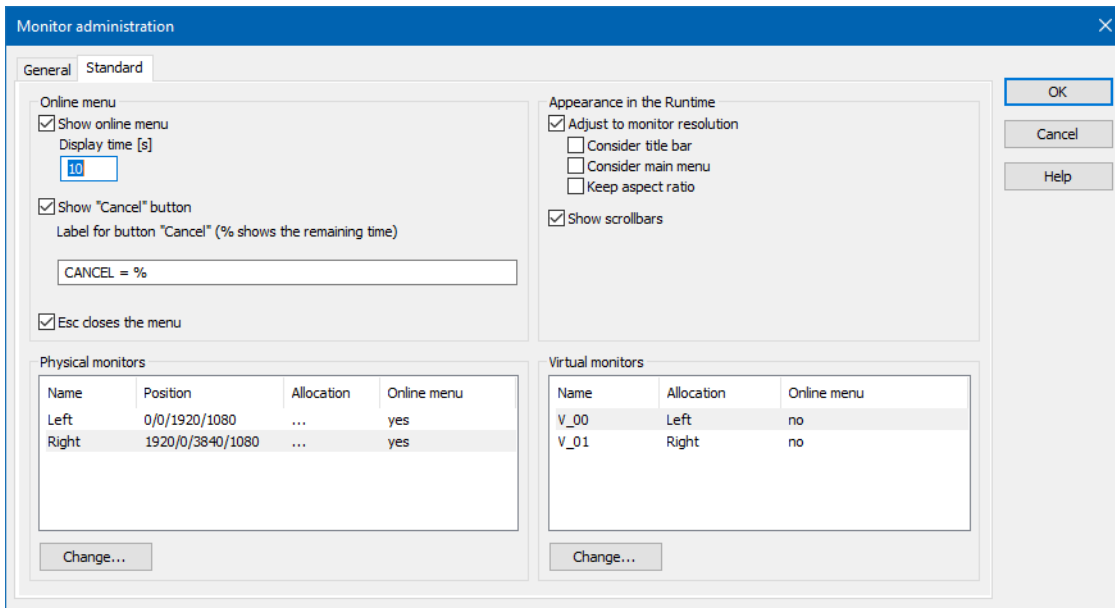
4. Save the file and close the text editor.

💡 **Information**

*The standard profile is always loaded by default on the zenon Web Client. However, you can stipulate a different monitor profile using the **SCREENPROFILE**= entry in `zenon6.ini`.*

4.2 Individual settings

Each monitor profile is represented in the configuration by its own tab. Here you define the settings for real and virtual monitors and the behavior in Runtime.

ONLINE MENU

Option	Description
Online menu	Behavior of the online menu in the Runtime.
Show online menu	`Active`: The menu is displayed at a screen switch in the Runtime and offers the monitors for which the option **Online menu** (on page 19) was activated.
Display time	Time in seconds for which the online menu is kept open.
Show "Cancel" button	`Active`: The **Cancel** button is shown in Runtime.
Change label for "Cancel" button	`Active`: The button used to close the online selection menu is displayed in Runtime. Font of the button can be changed as desired. **%** shows the remaining seconds until the automatic cancel.
Esc closes the online menu	`Active`: The online menu can also be closed by pressing the `Esc` key.

APPEARANCE IN THE RUNTIME

Property	Description
Appearance in the Runtime	Defines display options in the Runtime.
Adjust to monitor resolution	`Active`: The project resolution is adjusted to the monitor resolution of the current computer. `inactive`: Here you can fix the resolution of the project, i.e. the resolution of the project is not adjusted to the current resolution.
Consider title bar for the adjustment	`Active`: The title height is considered in the frame editor and in the runtime. This property exists out of compatibility reasons and is usually not needed. Note: Activation of this setting in Runtime leads to a movement of the screens downwards by the height of the title bar.
Consider main menu	`Active`: The menu height is considered in the frame editor and in the runtime. This property exists out of compatibility reasons and is usually not needed. Note: Activation of this setting in Runtime leads to a movement of the screens downwards by the height of the main menu.

Keep aspect ratio	▶ `Active`: If there is a change to a different resolution in Runtime, the aspect ratio is retained. ▶ `Inactive`: The aspect ratio may be changed. **Attention:** A change to the aspect ratio can have an effect on the display. For example: ▶ Circles are shown as oval. ▶ The connection points are no longer correct for rotated elements. ▶ Symbols are displayed as broken up.
Show scrollbars	`Active:` Scroll bars are displayed in the Runtime. These scroll bars make it possible to navigate in screens that exceed the monitor size.

REAL EXISTING MONITORS

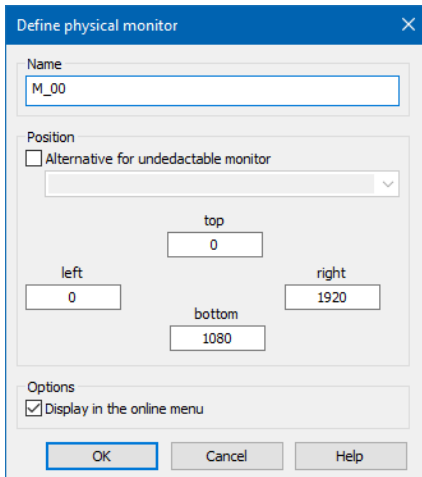| Property	Description
Real existing monitors (on page 18)	List with all physical monitors and the properties allocated to them.
Change...	Opens the dialog (on page 18) for defining the individual properties of the selected real existing monitor.

VIRTUAL MONITORS

Property	Description
Virtual monitors (on page 19)	List with all virtual monitors and the properties allocated to them. Screen switching relates to virtual monitors. Virtual monitors are assigned to real existing monitors in Runtime.
Change...	Opens the dialog (on page 19) for defining the individual properties of the selected virtual monitor.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

4.2.1   Engineering real existing monitors

Clicking on the **Edit** button in the **Real existing monitors** section in the tab for the individual setting (on page 15) of a monitor profile opens the dialog to configure real existing monitors.

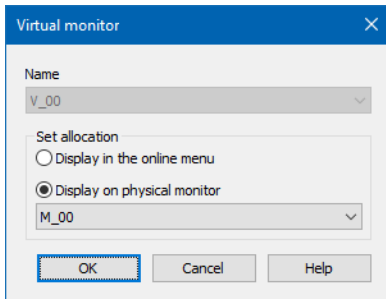| Parameter	Description
Name	Name of the monitor. Free text input with a maximum of 15 characters.
Position	Describes the position and resolution of the monitor. For example: Monitor left: 0/0/1920/1080 Monitor right: 1920/0/3840/1080
Alternative for undedactable monitor	`Active`: Makes it possible to select another real existing monitor from a drop-down list which is allocated to it, for example because it is not currently connected to the computer. The monitor is then displayed on the assigned monitor in the Runtime. Scroll bars make it possible to scroll between both monitor screens.
Display in the online menu	`Active`: In the Runtime, this monitor is offered in the menu for each screen switch which allows an individual selection of the monitor.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

4.2.2   Engineering virtual monitors

Clicking on the **Edit** button in the **Virtual monitors** section in the tab for the individual setting (on page 15) of a monitor profile opens the dialog to configure virtual monitors.

Parameter	Description
Name	Display of the name. This can be changed in the General settings (on page 12) tab.
Set allocation	Settings for the assignment of the monitor.
Display in the online menu	`Active:` In Runtime, the menu for selecting a monitor is displayed each time a screen is called up that has been assigned to this monitor.
Display on real existing monitor	Gives a fixed allocation of a virtual monitor to a real existing monitor. This allocation can be amended using the **Assign monitor** function.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

5. Change monitor resolution

If the monitor resolution is changed in the **Monitor administration** project property, this has an effect on the frames and the screens therein with their screen elements. Elements contained in screens can be distorted after the change and shown at other positions. When changing the monitor resolution, the global project and the individual projects must be amended accordingly.

GLOBAL PROJECT

CHANGE OF RESOLUTION IN THE MONITOR ADMINISTRATION

If the resolution is changed in the monitor administration dialog of the global project, the size of the frames in the global project is amended accordingly. The size of screens based on these frames and the elements contained therein are also changed.

> ⚠ **Attention**
>
> *After the resolution has been changed in the global project, the screens and elements are displayed according to the new resolution. However, in Runtime, they continue to be displayed with the settings of the respective project in which they are used. The resolution must therefore always be amended in the project too.*

CHANGE TO THE FRAME SIZE

If only the size of the frames is changed in the global project, but the resolution in the monitor administration remains the same, elements in screens that are based on these global frames are also changed.

INTEGRATION PROJECT AND IN SUBPROJECTS

CHANGE OF RESOLUTION IN THE MONITOR ADMINISTRATION

Each project has its own monitor administration.

If the resolution is changed in the monitor administration, the size of the frames of this project is amended accordingly. The size of screens that are based on these templates and the elements contained therein are also amended.

> 👍 **Hint**
>
> ▸ For multi-hierarchical projects:
>   Amend the monitor administration settings for each project in the Editor.
>
> ▸ Without adaptation to resolution:
>   If only the size of the frames and screens is to be changed, but the size and position is not to be changed, then export the screens into an XML file before amendment. Import the screens after the amendment again.

> ⚠ **Attention**
>
> *When configuring screen switching in the Editor, a list of the monitors that can be selected is shown. The content of this list depends on the last* **Monitor administration** *dialog that has been configured and confirmed with* **OK** *- regardless of the project in which multi-project administration of this project was carried out. This means: A change in Project A has an effect on the content of the list in Project B.*
>
> *Solution: Open and confirm the dialog in the project by carrying out a screen switch.*

EXAMPLE

A project has the resolution 1280 x 720. This is to be changed to 1920 x 1080.

INITIAL SITUATION

There are the following projects with the following settings:

- ▶ Global project with:
    - Frames: maximum 1280 x 720
    - Configured resolution 1280 x 720
- ▶ Integration project:
    - Screens: maximum 1280 x 720
    - Configured resolution 1280 x 720
- ▶ Subprojects:
    - Screens: maximum 1280 x 720
    - Configured resolution 1280 x 720

CONFIGURATION

The configuration depends on whether the elements contained in the screens are also to be amended.

Configuration including change of elements:

1. Global project:

   Change the resolution in the monitor administration to 1920 x 1080. Frames, screens and elements are thus amended.

2. Integration project:

   Change the resolution in the monitor administration to 1920 x 1080. The setting is thus amended for Runtime.

3. Subprojects:

Change the resolution in the monitor administration to 1920 x 1080. The setting is thus amended for Runtime.

Configuration without change of elements:

1. Export all screens to an XML file.

2. Amend the monitor resolution

3. Import the screens from the XML file.

6. Functions of the monitor administration

The monitor administration can be controlled in Runtime using zenon functions.
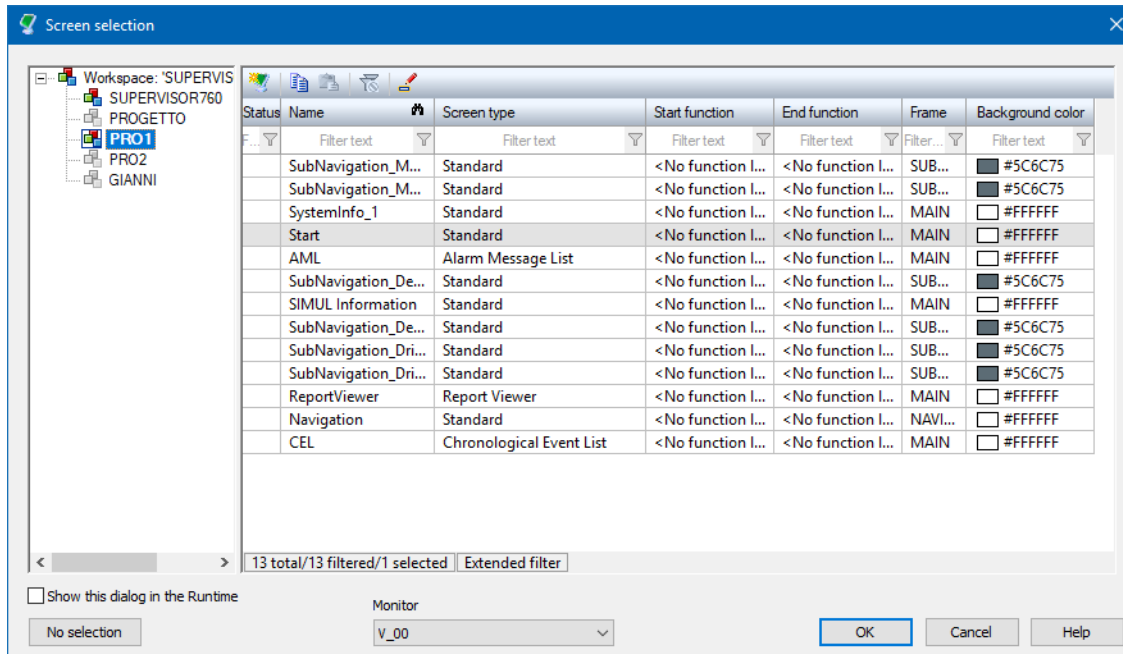
The following are available:

▶ Settings for screen switching (on page 23): The dialog for screen selection is expanded with the settings for monitor assigment.

▶ Assign monitor (on page 25): Makes it possible to allocate a virtual monitor to a real existing monitor in the Runtime.

▶ Display overview window (on page 26): Switches an overview window on in Runtime or closes it. The window shows all configured real existing monitors or frames and makes it possible to quickly select and switch these.

Settings for monitor selection are available for the following functions:

▶ Set focus to frame

▶ Close frame

▶ Close screen

6.1   Settings for screen switching

As soon as monitor administration is configured for more than one monitor, there are additional options available for screen switching in the selection dialog for screens to select the monitor on which the screen is to be displayed:

Additional options	Description
Monitor	Selection of the monitor from a drop-down list.
	This contains all virtual monitors defined in the monitor administration plus the **Current monitor** entry.
	Virtual monitor: The screen is switched to the monitor that is linked to the selected virtual monitor.
	If no real existing monitor was assigned to the virtual monitor during configuration (on page 19), but instead the option **Display online selection menu** was selected, a selection window to select a real existing monitor is offered.
	Current monitor: Always opens the screen on the monitor from which the call comes. For example: The button to open the AML is pressed on the left monitor, then the AML is switched to the left monitor. If the button to switch the AML to the right monitor is pressed, then the AML is switched to the right,

In the function overview, the monitor on which the screen is displayed is shown in brackets.
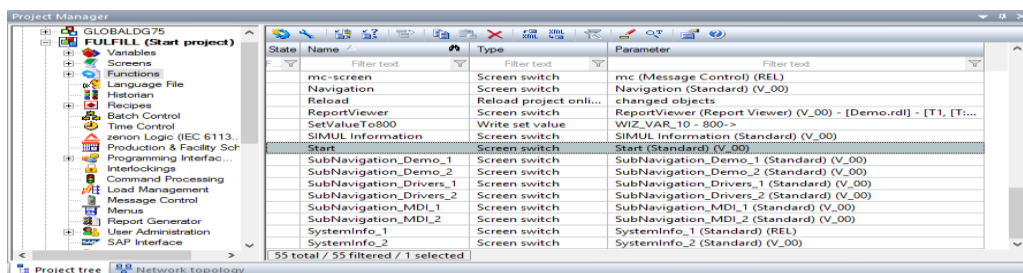

For example:

START (V_00) means: Switching is effected on the **START** screen and this is displayed on the virtual monitor **V_00**.
REL means display on the current monitor.

ONLINE MENU

If a screen switching function is carried out with the **Display online selection menu** option activated, the menu to select a monitor is shown before the function is activated. The contents of the menu and the duration it is displayed are defined in the monitor configuration (on page 15).
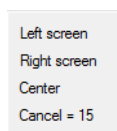
6.2   Assign monitor

With the **Assign monitor** function, virtual monitors can be assigned to real existing monitors in the Runtime, regardless of the configured assignment.

To configure the function:

1. Create a new function.

2. Go to the **Screens** group.

3. Select the **Assign monitor** function.

    The dialog to assign a virtual monitor to a real existing monitor is opened.

4. Create an assignment.

5. Close the dialog by clicking on OK.

MONITOR ASSIGNMENT DIALOG
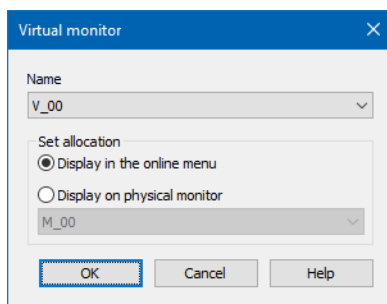
Parameter	Description
Name	Selection of the the virtual monitor from the drop-down list. All virtual monitors configured in the monitor administration are listed.
Set allocation	Selection of the assignment by means of radio buttons:
Display in the online menu	Shows a dialog in the Runtime (on page 39) to select the desired real existing monitor.
Display on real existing monitor	Assigns a virtual monitor to a real existing monitor. Monitor is selected from the drop-down list. This list contains all real existing monitors available in monitor administration.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

The functions are displayed in the detail view with the objective of allocation.
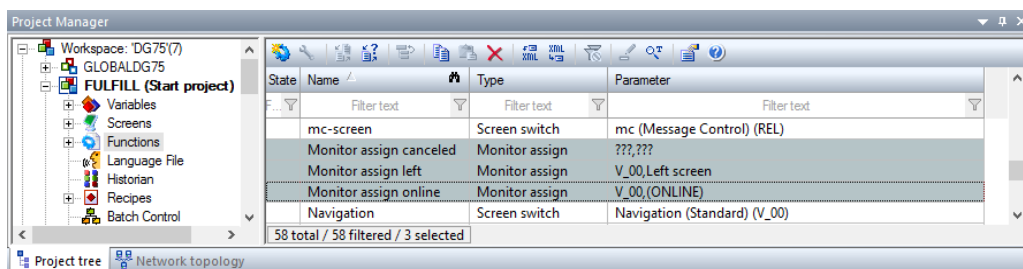
For example:

▶ **V_00,(ONLINE)**: The virtual monitor **V_00** is assigned to a real existing monitor in Runtime using the **online menu (on page 39).**

▶ **???,???**: assignment dialog was discarded; no function was carried out.

▶ **V_00,Left screen**: The virtual monitor **V_00** is assigned to the real existing monitor **Left screen**.

6.3 Display overview window

The **Display overview window** function displays the overview window in Runtime, which shows the real existing monitors or frames in a multi-monitor system (on page 5). A monitor or a frame can be activated by means of a mouse click.
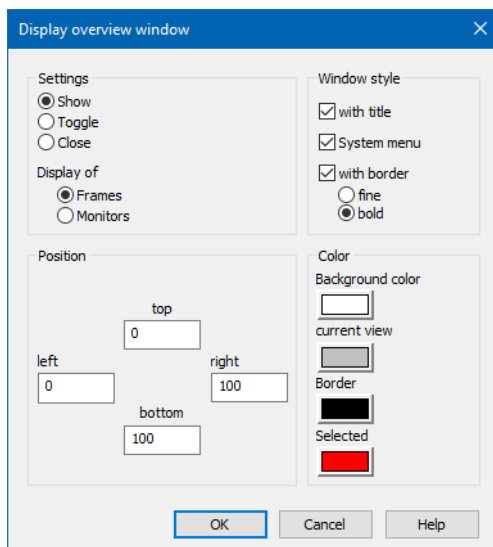
To configure the function:

1. Create a new function.

2. Go to the **Screens** group.

3. Select the **Display overview window** function.

   The dialog for configuring the overview window is opened.

4. Configure the overview window.

5. Close the dialog by clicking on OK.

DISPLAYING THE OVERVIEW WINDOW

SETTINGS

Parameter	Description
Settings	The function can either open, close or toggle the overview window. Selection is carried out by means of radio buttons:
Display	`Active`: The overview window is opened.
Toggle	`Active`: The display is switched between open and closed.
Close	`Active`: The overview window is closed.
Display of	Selection of display in the overview window. Either frames or monitors are displayed.
Frames	`Active`: The overview window divides the screen into frames.
Monitors	`Active`: The overview window divides the display into monitors.

WINDOW STYLE

Parameter	Description
Window style	
with title	`Active`: The overview window has a Windows title bar.
System menu	`Active`: A system menu is displayed if the title bar is activated.
with border	`Active`: Overview window is displayed with a border. The window size can be adjusted in Runtime by dragging the border. Selection of the border width by means of radio buttons:
▸ `fine`	`Active`: Bold border.
▸ `bold`	`Active`: Fine border.

POSITION

Parameter	Description
Position	Position of the overview window on the screen, calculated in pixels from the upper left edge for: ▸ `top` ▸ `bottom` ▸ `Left` ▸ `Right`

COLORS

Parameter	Description
Colors	Definition of the colors in the overview screen. Clicking on Color opens the palette.
Background color	Color of window background.
current view	Currently displayed frames/monitors.
Border	Color of border.
Selected	Selected frames/monitors.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

7. Example configuration

In this example, you can see possible configurations for the following project requirements:

1. 1 server with 2 monitors with a resolution of 1920 x 1080 each

2. 1 client with one monitor with a resolution of 1920 x 1080

3. 1 notebook for the service team with a resolution of 1024 x 768

GOAL

We are configuring the project so that a server with 2 screens can be visualized. For the client, we adjust the settings so that all tasks can be displayed on a single screen. We also change the resolution of the display for the service notebook. During operation, only the corresponding monitor profile must be selected on the corresponding Runtime computer in order to get the correct display.

START CONFIGURATION

1. Configure the INI file in accordance with the instructions in the Requirements for Runtime (on page 8) chapter in order to set the resolution in Runtime.

2. The basic configuration is set up in the monitor configuration:
   Navigate to Project Properties-> **Graphical design** -> **Runtime general**.

3. Click on the **Monitor administration** property.

4. The dialog for monitor configuration is opened.

5. First configure the General settings (on page 30)

6. Then configure the individual settings for:

   a) the   server with 2 monitors (on page 32)

   b) the client with one monitor (on page 35)

   c) the notebook for the Service Team (on page 37)

7.1   General configuration

The following is carried out first for the configuration:

▸   General settings are established, such as the number of virtual and real existing monitors

▸   Profiles for the three different configurations are created

GENERAL SETTINGS
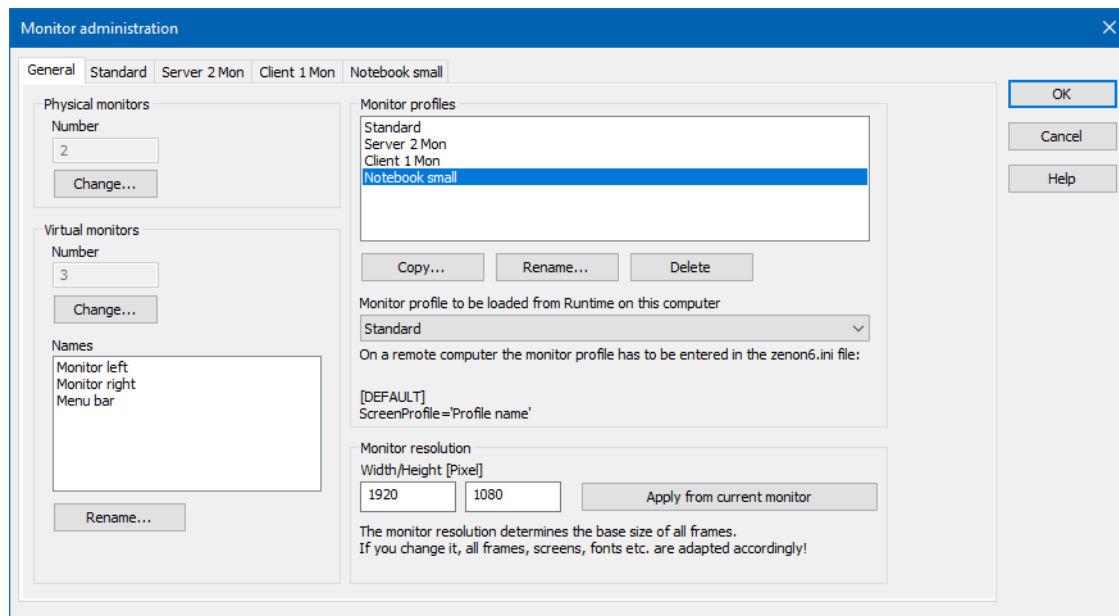
MONITORS

For our example, we are defining:

- ▶ 2 real existing monitors
- ▶ 3 virtual monitors:
  - • One for each process screen
  - • One for the desired switching of the menu bar: We can thus always determine whether the menu is called up on the right or left, without influencing the process screens.

Just to remind you: Virtual monitors are the objective of screen switches. These are assigned to real existing monitors in the Runtime.   Now you have the possibility of routing between the real existing and the virtual monitors. If, for example, there is no second monitor, such as with a notebook, the screens' output can simply be routed to the left monitor, without changing the configuration of the functions.

RESOLUTION

The set resolution is an important factor. This is the reference size for the amendment. It is set once before the project configuration is started and should not be subsequently changed. If this setting is subsequently changed, all coordinates of the elements are recalculated in the screens.

We enter our target resolution of 1920 x 1080.

MONITOR PROFILES

We create a separate profile for each configuration of our example. In our example:

▶ Server 2 Mon

▶ Client 1 Mon

▶ Notebook small

To do this:
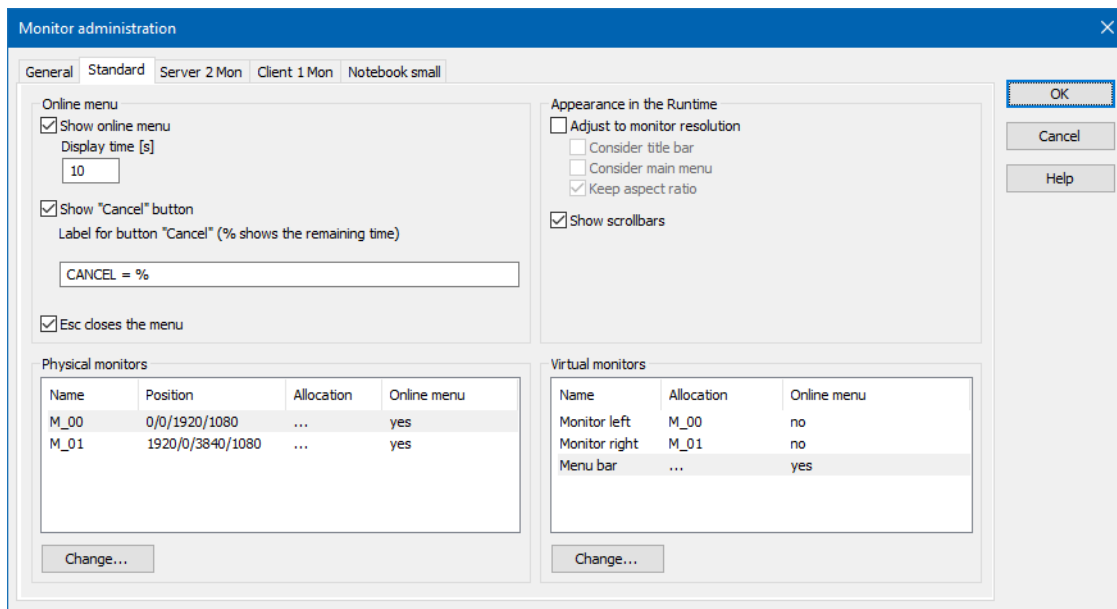
1. Highlight the **Standard** profile.

2. Click on Copy.

   The dialog for renaming is opened.

3. Enter the new name (the length is limited to 15 characters).

4. Click on **OK**.

5. Repeat the process for all further profiles.

Each profile has its own tab for individual configuration in the monitor configuration.

We are starting with the Server 2 Mon (on page 32) tab.

7.2 Configuration: Server with 2 monitors

The first configuration is for our server with two monitors.

We will configure:

▶ The online menu

▶ The appearance in Runtime

▶ the real existing monitors

▶ the virtual monitors

ONLINE MENU

The online selection menu makes it possible to select the real existing monitor that a screen is switched to in Runtime. The following must be the case for this:

▶ The online selection menu must be activated.

▶ In the allocation of the virtual monitor, **Display online menu** must be selected
or
an Assign monitor (on page 25) function must be configured.

For our example:

▶ Activate the option.

▶ Select a **display duration** of `10` seconds: If no action has been set by then, the menu disappears again.

▶ Activate the **Label** option: this means that a **Cancel** button will be offered in Runtime.

▶ Label the button with **Cancel = %**: The remaining time until cancellation is thus shown in the menu.

▶ Activate the **Esc key closes menu** option: this means that the menu can also be closed in Runtime using the `Esc key`.

The menu is then displayed in Runtime when a screen switch to a virtual monitor with an online menu is executed:

```
M_00
M_01
Cancel = 10
```
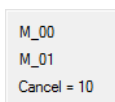
The real existing monitors **M_00** and **M_01** are available. There is still 10 seconds time to make a selection after canceling. Clicking on **Cancel** or pressing the `Esc key` closes the menu immediately.

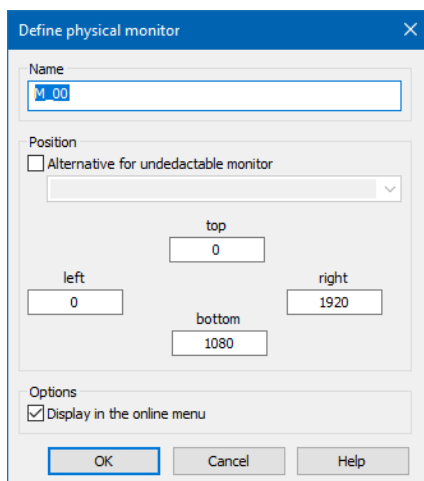**SCREEN SETTINGS IN RUNTIME**

To display the screen in Runtime:

▶ Deactivate the **Adapt display to screen resolution** option: the display thus always remains in the configured size. (if this option is active, the display is adapted to the current resolution.)

▶ Activate the **Display scroll bars** option: this provides scroll bars in Runtime that make it possible to scroll through the screen.

CONFIGURATION OF REAL EXISTING MONITORS

Two monitors are available on the server. The two real existing monitors from the example project are configured accordingly.

The second monitor, for example, receives the corresponding coordinates in order to connect to the first monitor on the right horizontally.

The name can be set for each configuration. To configure the monitors:

1. Open each of the monitors in sequence by clicking on the **Change** button

2. Give it a name; in our example this will simply be **M_00** and **M_01**.

3. Deactivate the **Alternative for untetectable monitor** option (we need this in the other configurations).

4. Enter the coordinates,
   the calculation is made from the upper left corner of the left monitor

5. Activate the **Display in online menu** option, so that the monitor is also available in Runtime

CONFIGURATION OF VIRTUAL MONITORS

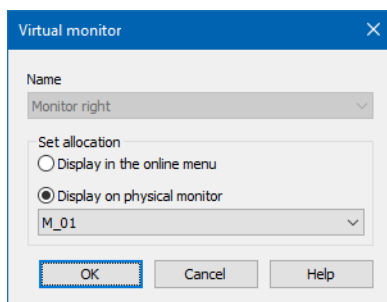In this configuration, the virtual monitors are assigned to the real existing monitors.

Just to remind you: Screen switches refer to real existing monitors. Assignment of virtual monitors decides the real existing monitor on which the screen is actually switched.

In our example, there are three virtual monitors available. The two first monitors are each assigned to a real existing monitor. The third virtual monitor makes it possible to switch the menu bar on or off as

desired. This is not assigned to a real existing monitor, but this allocation should be offered in the online menu.

To assign the first two virtual monitors:

1. Open each of the monitors in sequence by clicking on the **Change** button

2. The names are only displayed; they are the same for all profiles and can only be changed in the **General** tab.

3. Select **Display on real monitor**.

4. Select the desired real existing monitor from the drop-down list.

   - **M_00** for **monitor left**

   - **M_01** for **monitor right**

Configuration of the third virtual monitor is similar.

Difference: instead of **Display on real monitor**, select the **Display in online menu** option.
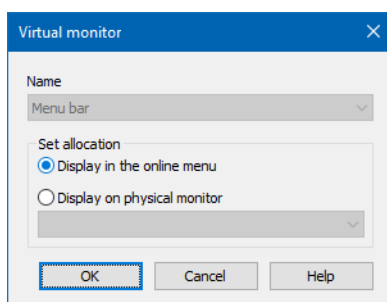
The profile is therefore configured for the server with 2 monitors.

Now change to the Client 1 Mon (on page 35) tab.

7.3 Client configuration with one monitor

Configuration for the client with one monitor generally corresponds to server configuration. However, there is only one screen available here. This results in two significant differences:
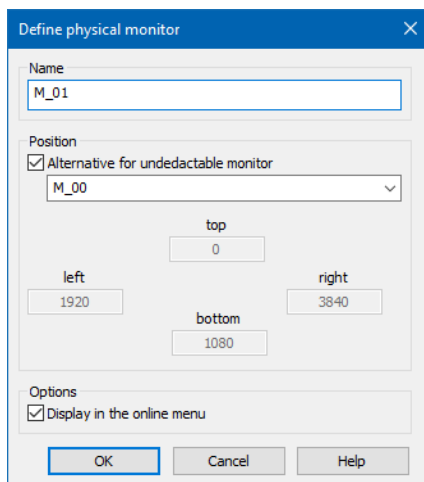
1. The second real existing monitor must be mapped onto the first one

2. The menu bar is assigned directly.

For the real existing monitors:

1. Open the configuration of the monitors **M_01**.

2. Activate the **Alternative for undetectable monitor**.

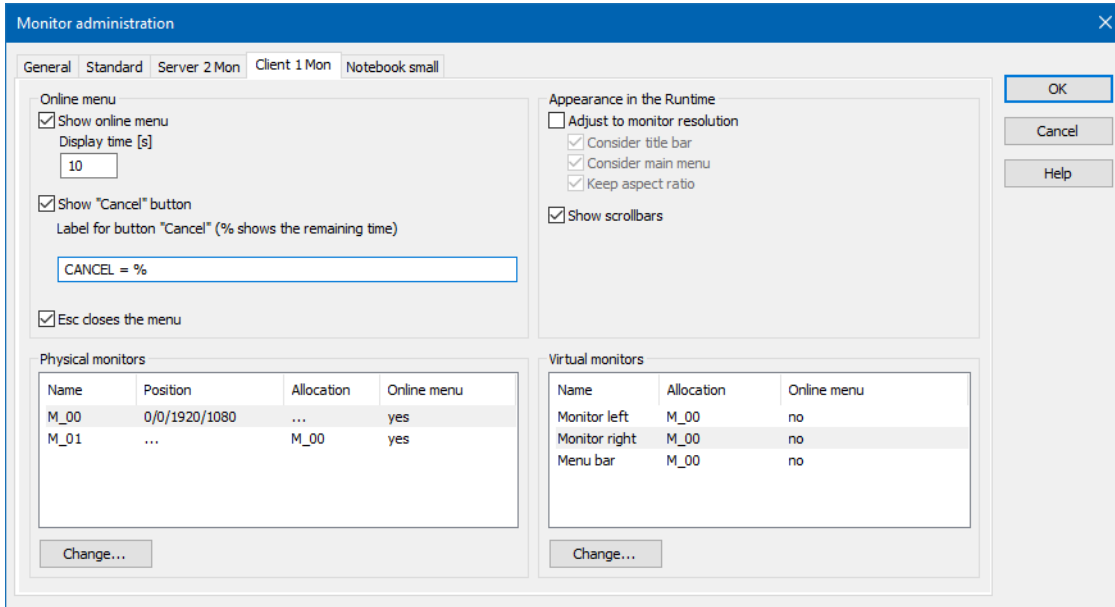3. Select from the **M_00** combobox.

The online selection menu is not needed in Runtime, but you can leave the options active.

For virtual monitors:

1. Open the configuration of the monitor **Menu bar**.

2. Activate the **Assign to real existing monitor** option.

3. Select from the **M_00** drop down list.

The whole configuration for **Client 1 Mon** now looks as follows:

Now only the notebook configuration is missing from our example. Change to the Notebook small (on page 37) tab.

7.4   Configuration of Service Team notebook

The configuration of the notebook for the service team corresponds to the configuration of the client computer with one monitor. The resolution is different however. This must be adjusted.
To do this:

1. Open the configuration of the real existing monitor **M_00**.

2. Enter the corresponding coordinates,
   in our example: `0/0/1024/768`.

The resolution is now adjusted to the real resolution of the notebook and monitor **M_01** is mapped to monitor **M_00** as on the client. You will now have scrollbars in Runtime to be able to scroll the display.
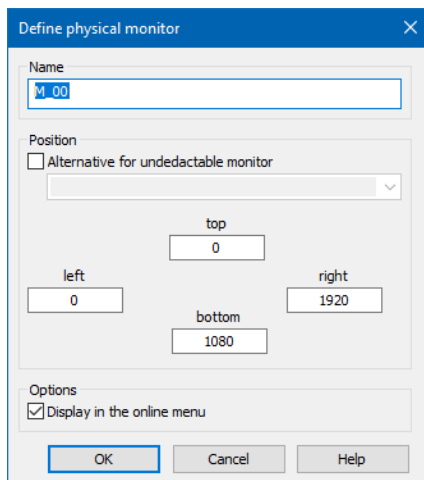
All other settings correspond to those of the client computer:
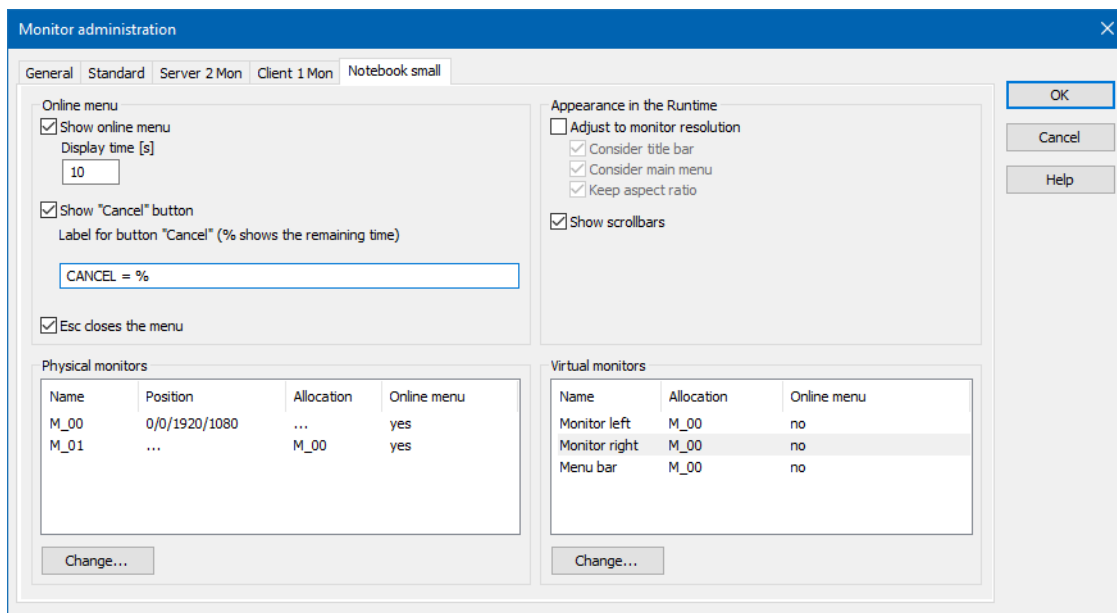
Confirm the configuration by clicking on **OK**.

7.5   Other configuration

In the project, you must subsequently:

▶   For screen switches, select the virtual monitor that the screen is to be switched to

▶   Define the respective monitor profile (on page 8) to be used on the different computers (for the configuration computer, select the profile in monitor configuration (on page 12))

▶   For functions such as Set focus on frame, Close frame or Close screen decide the monitors for which the action is applicable

▶   If necessary, configure an Assign monitor (on page 25) function, to be able to assign virtual monitors to real existing monitors in Runtime (on page 39) regardless of the initial configuration

▶   Configure an overview window (on page 26) in order to be able to navigate (on page 40) easily in Runtime.

8.   Monitor administration in the Runtime

There are different possibilities available in Runtime,

▶   for selecting monitors (on page 39)
    and

▶   navigating between monitors (on page 40)

> 💡 **Information**
>
> *If Runtime is started via a Remote Desktop connection, the resolution of the Remote computer is used. The resolution may then possibly be different to that configured, whereby differences in the display may occur.*
>
> *The resolution of the remote monitor can also be defined by means of an INI file (See **Setting monitor profile on Runtime computer** section in the General settings (on page 12) chapter).*

8.1   Monitor selection in the Runtime

There are different options available for assigning virtual monitors to real existing monitors in Runtime:

▶   Online selection when being called up

▶   **Assign monitor** function

ONLINE MENU

If a screen switching function is carried out with the **Display online selection menu** option activated, the menu to select a monitor is shown before the function is activated. The contents of the menu and the duration it is displayed are defined in the monitor configuration (on page 15).
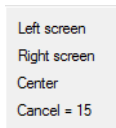
ASSIGN MONITOR FUNCTION

The Assign monitor (on page 25) function makes it possible to call up the online menu regardless of screen switching and to allocate virtual monitors to a real existing monitor.

8.2 Navigation in Runtime

Navigation between monitors is possible in Runtime by means of:

▶ Overview window

▶ Scroll bars

OVERVIEW WINDOW

Overview windows are configured as a function (on page 26). Either a specific function is created for displaying and closing the overview window, or you use the toggle function to switch between the window being switched on or off.

A window is shown in Runtime when the function is carried out. This shows the complete screen area available, divided into monitors or frames. Different functions must each be configured for the display of frames and monitors.

Monitors or frames are selected by clicking the mouse in the window.
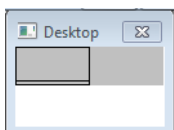
SCROLL BARS

Screens can be navigated quickly using scroll bars. Scroll bars are displayed if:

▶ The **Display scroll bars** property was activated in the monitor profile (on page 15)

▶ A real existing monitor or a different real existing monitor is mapped

9. Remote Desktop

On a remote desktop client with several monitors, these can be used with a remote connection if certain requirements are met. This is also possible for multi-monitor configurations in zenon Runtime, even if the actual system initially only supports one monitor.

Requirements for the configuration of a multiple-monitor system for remote desktop:

Client:

▶ Windows Enterprise or Ultimate

▶ RDP allows genuine multi-monitor support
  Unterstützt Option `/multimon`

Server:

▶ Windows Enterprise or Ultimate
  or

▶ Terminal server/remote desktop services role

▶ Guidelines allow multi-monitor support

You can find details on configuration, among other places, in this Microsoft blog entry:
https://blogs.msdn.microsoft.com/rds/2009/07/01/using-multiple-monitors-in-remote-desktop-session
/
(https://blogs.msdn.microsoft.com/rds/2009/07/01/using-multiple-monitors-in-remote-desktop-session
/)