

# Ganz CONTROL Video Wall Manual





Contents

Video Wall..... 2

Create Video Wall..... 2

    Create Video Wall Groups ..... 4

Video Walls on Recording Servers..... 6

Client Startup Sequence ..... 6

Video Wall Setup ..... 8

    Advanced window settings..... 8

    Assign Video Wall Screens..... 10

    Tiled Displays ..... 10

Video Wall Management..... 12

    Quick Content Output ..... 12

    Advanced Video Wall Management ..... 12

    Multi-display Setup..... 14

## Video Wall

Video wall configuration in Ganz CORTROL is very flexible and it allows you to set up video output in any physical display combination. Templates for video walls are set up via Ganz CORTROL Console and then they become available in Ganz CORTROL Client, depending on the permissions of the connected user. Using the dedicated *Video Wall* tab, you can easily control the contents of all available video walls.

Video wall setup with Ganz CORTROL is amazingly easy and like that of the layout template creation: template creation is via the Ganz CORTROL Console and then assigned an actual layout/channel view from the Ganz CORTROL Client.

To access video wall management in Ganz CORTROL Console, choose the *Configuration* section in the bottom-left panel and then select the *Video Walls* component from the menu on the left.


Note the Ganz CORTROL Global software edition supports the Video Wall functionality. Connection to a Ganz CORTROL Global server is a requirement for the video wall functionality to become available. If any Ganz CORTROL Recorder machines are hosting the video walls, you will still need to connect to the Ganz CORTROL Global server from Ganz CORTROL Client: if the connection is lost to the central management server, your client application will automatically re-connect via a mirror (if available) or to the recording server(s) directly. There is no need to enter any of the Ganz CORTROL Recorder addresses manually.

## Create Video Wall

Click the + *New video wall* button on the upper panel to bring up the configuration dialog box.

On the *Details* tab, enter the settings for the target video wall profile:

- **Title:** User-defined video wall name
- **Server:** Choose where the video wall will be available (leave **none** for Ganz CORTROL Global - recommended option for most cases)

 By default, all video walls run on the Ganz CORTROL Global server. We recommend that you leave your video walls attached to the **central management server** unless you have reasons to move them to a recording server or Client PC. Below, you will find details and limitations of storing video walls on a Ganz CORTROL Recorder server, and or Client PC.

Then, select the video wall **grid size** by choosing the number of rows and columns from the drop-down lists; the maximum total number of viewports is 100 (10x10 layout), and a maximum number of rows/columns can be up to twenty. The viewport layout below will immediately reflect the changes, with display numbering for your convenience. Once you have chosen the video wall size, you can apply the following **adjustments** to the layout using the buttons below:

- **Merge viewports:** Select a rectangular area containing multiple cells by clicking and dragging (selected cells may highlight light green as a result), then click the *Merge* button
- **Remove viewports:** If the video wall is irregular (not strictly rectangular) or you wish to pass over displays, select one or more cells and click *Remove* to exclude the viewports from the grid
- **Add viewports:** This action is the opposite of removing viewports; click an empty area and click *Add* to insert a viewport

*Video wall layout and details*

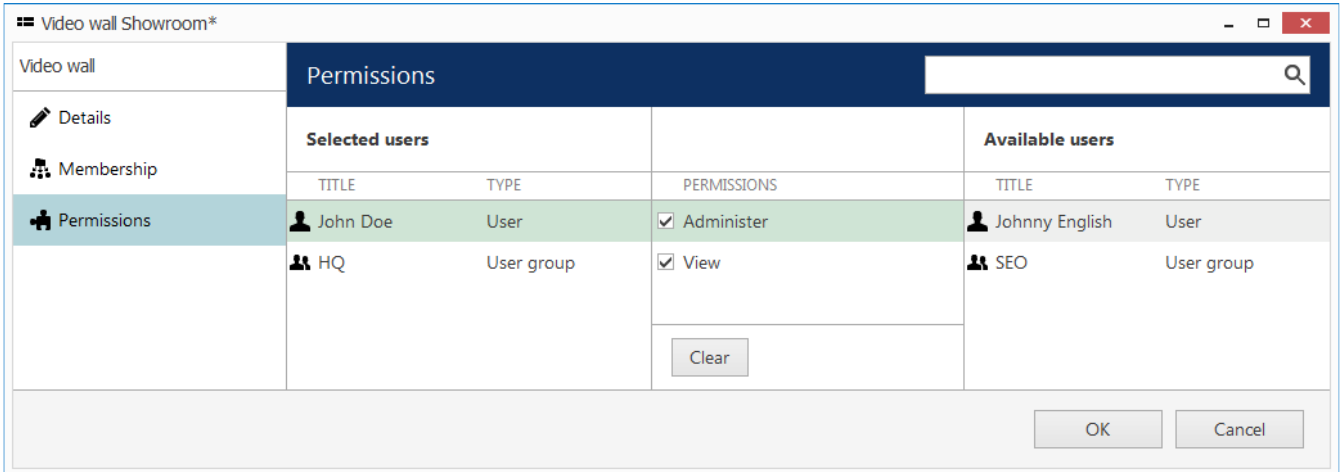
Click any viewport to change its name using the *Properties* section on the right-hand side. Thus, each display belonging to the video wall can have both a number and a title for users' convenience.

Once the viewport configuration is ready, switch to the *Membership* tab to add the target video wall profile to existing video wall **groups**. Manipulate groups by double-clicking items in either column or by using the *Add* and *Remove* buttons below. Each video wall can participate in one or multiple groups.

Selected groups		Available groups	
TITLE	TYPE	TITLE	TYPE
Hall S31	Video wall group	Hall W14 West	Video wall group
		Hall W14 East	Video wall group

*Choose group(s) for the target video wall profile to be a member of*

On the *Permissions* tab, choose users and user groups to **view and administer** the target video wall profile. *Administer* permission allows users to change video wall layouts via Ganz CORTROL Client; *View* permission only will enable them to view the existing video wall layouts assigned by other users.



### Assign user privileges

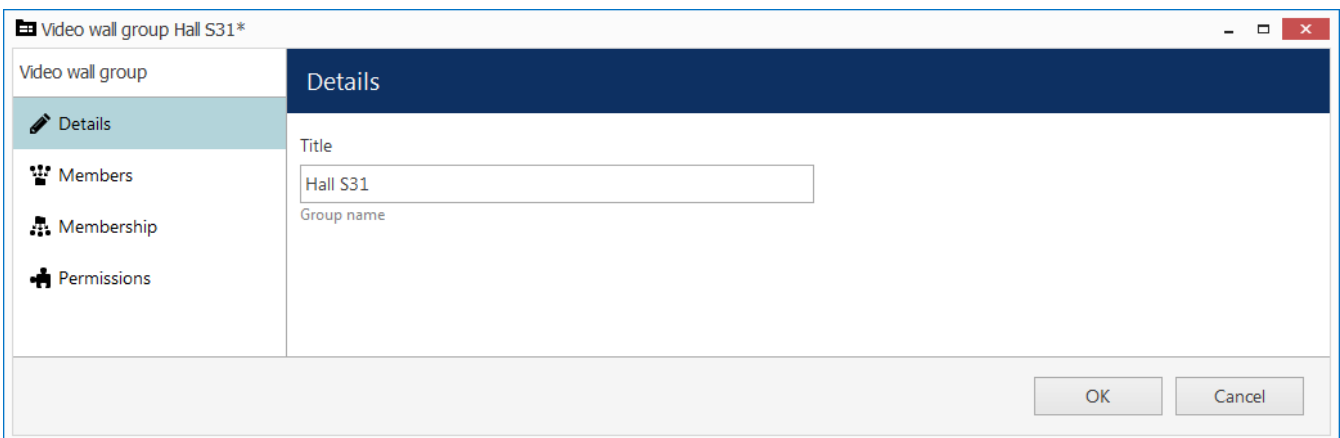
When done, click *OK* to save and close the dialog box. A newly created video wall profile will appear in the item list and will become available for configuration in Ganz CORTROL Client. The video wall list contains information on grid size and the total number of viewports for each item.

Use the buttons on the upper panel to edit, remove, and quickly assign group membership to the selected video walls (use CTRL+click or Shift+click to select multiple items at once). The bottom panel allows you to filter recently created/updated items.

## Create Video Wall Groups

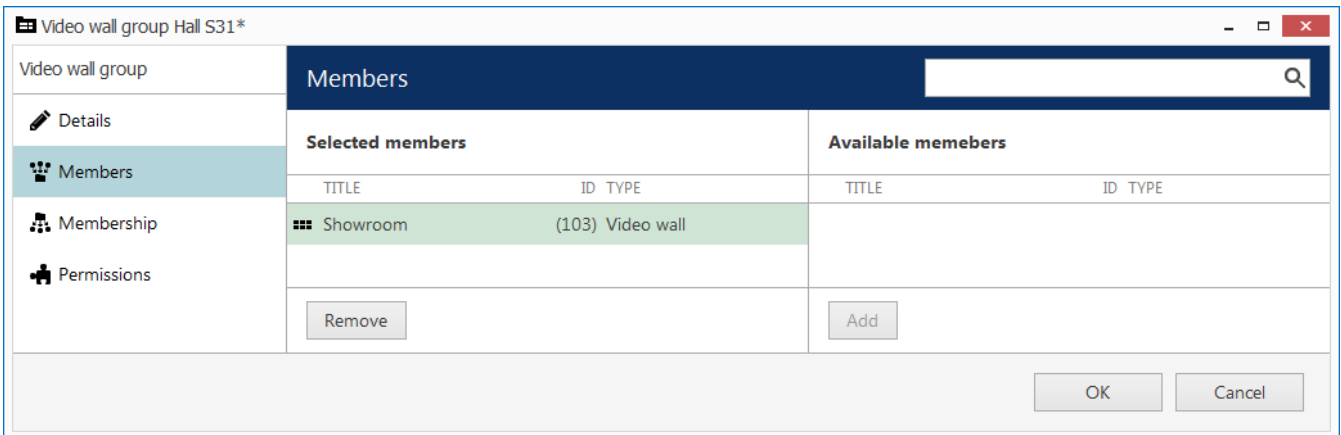
Video walls, as well as other resource types in Ganz CORTROL, can be organized for easier management. To create a group for video walls, click the down arrow near + *New video wall* button and choose *New video wall group* from the drop-down list.

On the *Details* tab, enter the video wall group title.



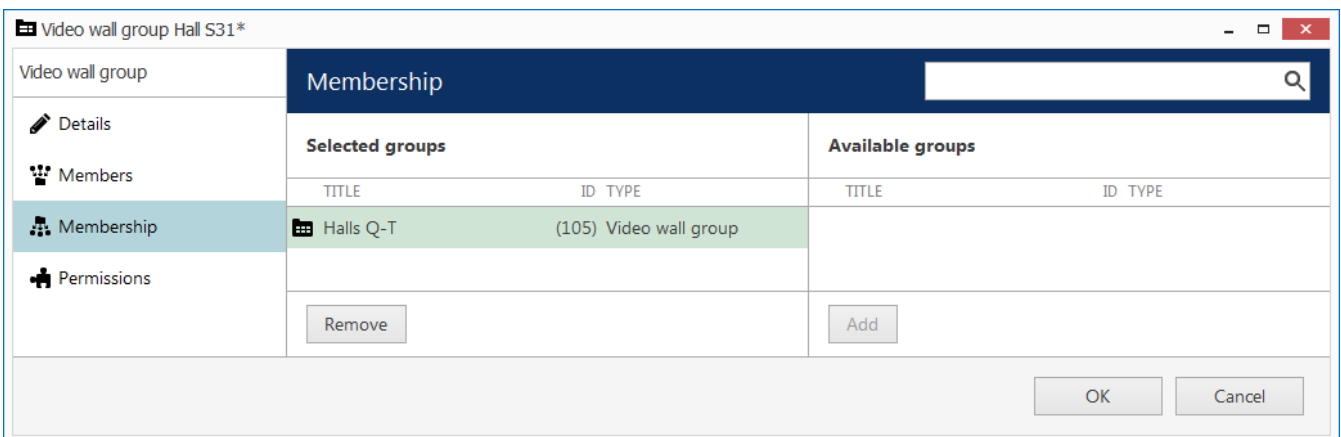
Enter a name for the target video wall group

Switch to the *Members* tab to choose existing video wall configurations to be included in the target group. Manipulate items either by double-clicking them in either column or by using the *Add* and *Remove* buttons below. Each video wall can participate in one or multiple groups.



*Choose members for the target group*

On the *Membership* tab, select other video wall groups that should include the target group as a member (nested groups).



*Choose group membership*

Finally, the *Permissions* tab lets you choose users and user groups to view and administer video walls for the target group. *Administer* permission allows users to change the member video wall layout via Ganz CORTROL Client; *View* permission only allows them to view the existing video wall layouts assigned by other users.

Once you have finished, click *OK* to save and close the dialog box. The newly created video wall group will appear on the item list. Use the buttons in the upper panel to edit/remove groups (use *CTRL+click* or *Shift+click* to select multiple items at once). The bottom panel allows you to filter the recently created/updated things.

## Video Walls on Recording Servers

Starting from software version 1.15.0, it is possible to assign video walls to Ganz CORTROL Recorder computers - instead of running them on Ganz CORTROL Global. Ganz CORTROL Client instances acting as video wall clients still need to be connected via the Ganz CORTROL Global address (they will switch to local streaming automatically once the connection to the central server is lost).

This option has been added for deviant use cases, where the central management server is [often] unavailable from the Ganz CORTROL Recorder locations, while it is still necessary to preserve the video wall functionality locally. Such a configuration has certain limitations; in most cases, you can leave the video wall running on your central server and use [mirroring](#) to ensure central server functionality during its downtime.

Advantages:

- The video wall contents is available for all Ganz CORTROL Client workstations adjacent to the recording server, which hosts the video wall
- The video wall tab is available on these "local" Ganz CORTROL Client stations, and it is possible to change the current video wall state manually
- E&A rules on the "host" recording server work for the "local" video wall
- If the "local" recording server fails, the video wall will continue to run on the "local" failover node

Limitations (for the moments when there is no connection to Ganz CORTROL Global):

- It is impossible to change startup layouts/sequences for such a video wall
- This video wall will be unavailable for all "external" Ganz CORTROL Client stations (as well as other resources)
- It will be impossible for this video wall to accept "external" E&A triggers via global events

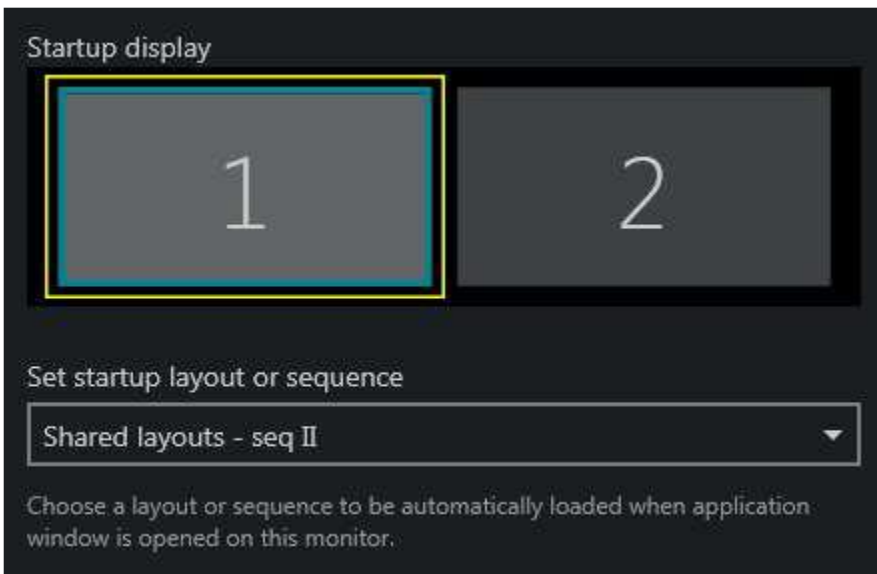
In other respects, such "local" video walls do not differ from regular ones, which are stored on the central management server. You can change the *Server* property of any video wall via the Ganz CORTROL Console at any time, moving the video wall configuration to another server at any time.

## Client Startup Sequence

Any sequence can be set to start automatically when the Ganz CORTROL Client application is launched. There are two available setup options:

For local displays, the startup sequences are defined in the [Multi display setup](#). For video wall displays in Ganz CORTROL Global, the local startup option is disabled, and the startup sequence should be assigned via video wall management

To assign a startup sequence to a **local display**: while in *Live view*, click the *Multidisplay setup* button in the top right corner, then click *Advanced* to bring up the settings. Select the target window in the list, then choose your desired sequence from the drop-down list.

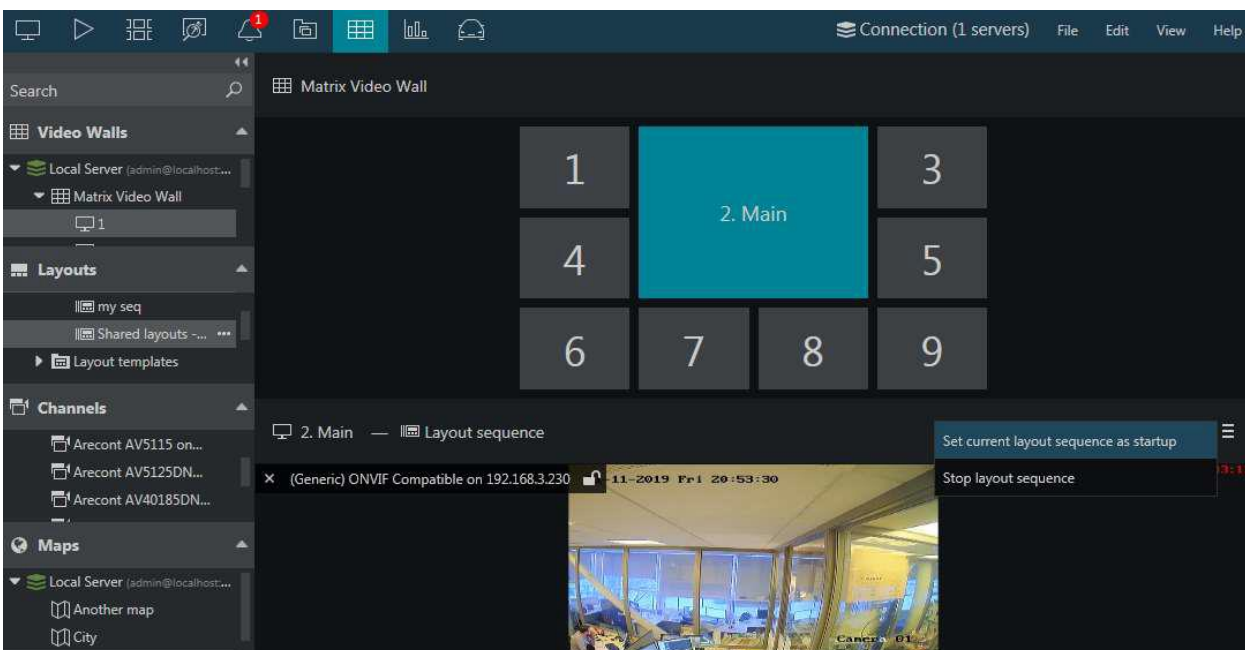


*Any existing layout or sequence can be set as a startup item*

Ganz CORTROL Global servers also have a [video wall](#) feature. In the same dialog box, you can assign any display to a **video wall screen**. If you do so, the startup layout/sequence set will be **discarded and disabled**; to assign a startup item for the video wall display, switch to the Video Wall tab of the Ganz CORTROL Client application.

First, select the video wall from the resources panel either by double-clicking it in the Resources panel or by dragging it from the list onto the upper frame. The video wall thumbnail will appear: click the display you want to set the startup item for, and its current contents will appear below.

Drag and drop your desired layout sequence onto the bottom screen part: The sequence will be placed on the video wall screen immediately and you will see a preview. Then, click the menu icon on the upper right corner of the preview and choose Set current layout sequence as startup.



*Set a startup sequence for the video wall display*




When the Ganz CORTROL Client application is started on the target video wall display, the selected sequence will start playing automatically. To stop it, select the *Stop layout sequence* from the same menu.



## Video Wall Setup

The idea of the video walls in Ganz CORTROL is that you create a layout in Ganz CORTROL Console and then assign Ganz CORTROL Client application windows to video wall screens in the layout. Afterward, the whole video wall can be easily managed from any location.

In this section, we will review the settings for the Ganz CORTROL Client application windows and see which ones are required for the video wall setup.

### Advanced window settings

To access window setup in Ganz CORTROL Client, open the *Live* section, click the *Multi display setup*  button in the upper-right-hand corner - just under the main menu - and then click the *Advanced* button to bring up the configuration dialog box.

WINDOW NAME	DISPLAY	IS PRIMARY	STARTUP LAYOUT	IS POP-UP	LAYOUT POP-UP	FULLSCREEN	VIDEO WALL SCREEN
 Ganz CORTROL Clie...	1	Yes	Demo	Yes		Yes	1
 Window 2	2			Yes		Yes	2

#### Advanced window settings

The advanced window settings dialog box offers the following possibilities:

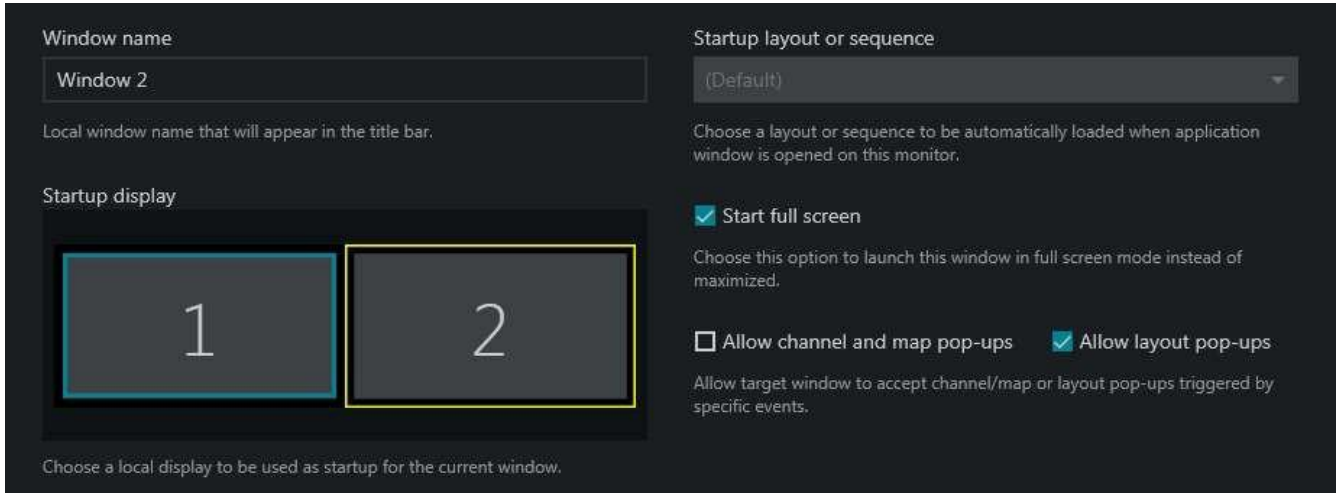
- Create windows for the available local displays and manage their properties
- Assign default layouts and sequences to Windows (local displays only)
- Bind windows to video wall displays

In the upper part of the configuration dialog box, you can see the available window list. Already there by default is the main GANZ CORTROL Client window (marked as *Primary*), which cannot be deleted or renamed. More windows can be added, although the number is limited to the number of displays physically connected to the workstation.

For each window, the following items are displayed in the summary list:

- Display number
- Primary or not (cannot be changed)
- Startup layout if set
- Channel/map pop-ups allowed or not
- Layout pop-ups allowed or not
- Start full screen or not
- Video wall screen number if set

To add a new window, click the + Add window button in the upper-left-hand corner (when the window amount has reached the connected display amount, the buttons greyed out). You can also create any additional local windows by clicking the display thumbnails in the Multi-display setup menu (before opening Advanced settings).



## Window settings

Select the parameters of the new window and click *Save* for the changes to take effect.

All these parameters can be set for each window (including the default primary window) in the dialog box section below the window list.

The following settings are available:

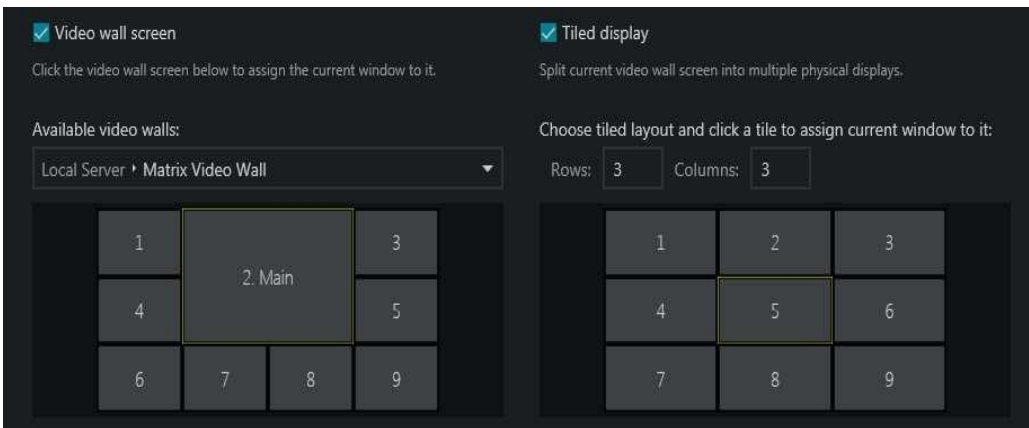
### General Settings:

- **Window name:** Set window title to be displayed in the application title bar of each window
- **Startup display:** Select a display to set as the start window (click to highlight with a yellow frame)
- **Startup layout or sequence:** Pick an item to be displayed on window startup; select *(Default)* to autofill a 2x2 layout at Ganz CORTROL Client startup
- **Start full screen:** Enable the target window to start in full-screen mode; if this is disabled, the window will start up simply maximized
- **Allow channel and map pop-ups\*:** Enable video/map popups on the target window because of the event/action rule execution
- **Allow layout pop-ups\*:** Enable layout pop-ups on the target window because of the event/action rule execution

### Video wall section:

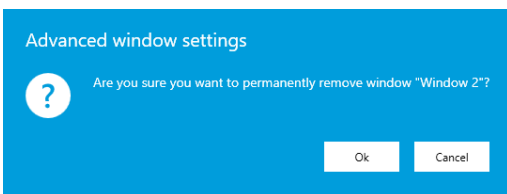
- **Video wall screen:** Select to make the target window a part of the video wall configuration; choose the video wall from the drop-down list below
- **Video wall visual element:** Choose (click to highlight with a yellow frame) a video wall screen to serve as the target window output
- **Tiled display:** Enable to split a target video wall screen into multiple physical displays
- **Tiles:** Select the grid size and click a tile to assign the current window to it

\*Note, Enabling channel/map pop-ups disables layout pop-ups and vice versa.



*Video wall screen assignment*

To delete a window, select it in the list and click the recycle bin icon in the upper-right-hand corner; you will be prompted to confirm the action. Note that all the window settings will also be removed, once you have removed a window and clicked *Save* in the *Advanced settings* dialog box, the deleted window will also be closed. You can remove any window, apart from the primary one.



*Confirm deletion*

## Assign Video Wall Screens

**Briefly:** For each application window, enable the Video wall screen setting in the lower section > select the video wall from the drop-down list > click the desired video wall screen > save. Window settings are explained in more detail above.

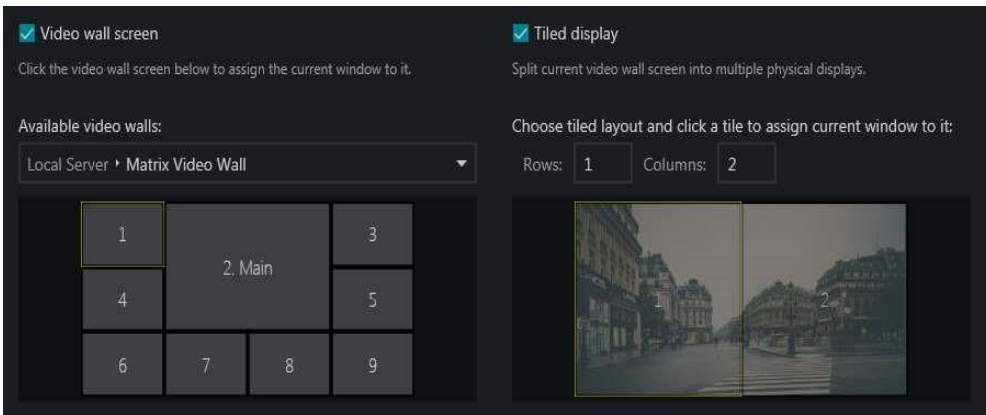
For a video wall to be available here, the video wall template should be pre-defined via Ganz CORTROL Console, and the current user account must have the Manage video wall permission granted. If you have enabled the video wall setting but there are none in the drop-down list, make sure you have your Ganz CORTROL Global server connected and check its configuration in Ganz CORTROL Console.

If you wish to combine multiple physical displays into one virtual video wall screen (tiling), enable the Tiled display option on the right, then choose which screen side each display belongs to.

## Tiled Displays

Sometimes, flat panel displays with no bezel are combined physically to form one ultra-high-resolution surface. The Ganz CORTROL Client supports such configurations and allows splitting each video wall display into multiple tiles, and further assigning individual tiles to different physical displays. These displays can be driven either by the same or different workstations: the resulting tiled wall will look the same. Thus, a set (group) of physical monitors (tiles) form a single video wall screen, which is then used as the contents' destination. The tiles are set up once, and this configuration layer is then completely transparent for the video wall management: you will simply address video wall screens later, no matter if each screen consists of one or more windows.

To enable tiling, first, assign all displays to the same video wall screen, then choose different regions (tiles) for each physical display using the visual elements.



*Tiling example with channel output visualization*

**Example:** stretch one channel output to two Ganz CORTROL Client application windows, which run on two different client machines.

### Configuration:

- For **both** windows:
  - Enable video wall in the advanced window settings, as shown above
  - Choose the same video wall and video wall screen - video wall *Matrix*, screen 1
  - Enable the *Tiled display* option
  - Enter one-by-two layout
- For Window **1**: Choose tile 1 (left)
- For Window **2**: choose tile 2 (right)

As a result, Ganz CORTROL Client will automatically treat two displays as a single screen, and any contents sent to this video wall screen will be stretched to fill both physical surfaces.

Note that the contents of the **tiled displays** can be defined via **video walls only**, either by sending items to the video wall screens from the item menu (...), or by opening the video wall management tab. If you send items to local screens (by double-clicking or dragging and dropping them from the resources list), only a part of the tile will be used, producing an undesirable effect.

Make sure to calibrate tiled displays so that they have similar brightness and color settings. The settings are available via operating systems or utilities bundled with graphics card drivers.

One Video Wall screen may be applied to many different displays at any given moment  
 Example:

- In the office, video wall *Screen 1* consists of **one** physical display, and in the control room, using tiling, the same output may be seen on **four** displays
- Someone manages the video wall from the corresponding tab, the *Screen 1* contents are changed simultaneously in both places

Both channels and maps can be tiled. However, visual overlay elements (e.g., buttons, and [portals](#)) will be unavailable. Text from data sources will overlay the video, as usual.

## Video Wall Management

Once the Ganz CORTROL Client application windows have been attached to the video wall displays, it becomes possible to send resources directly to any video wall display. You can do this in two ways: send resources directly from their menu or enter the full-featured video wall management mode. The first option is convenient for quick edits, the second option allows full control over the video wall contents. Both modes handle video wall screens and not individual tiles if the tiled displays are enabled. Thus, you do not need to worry about the tiles: Ganz CORTROL Client will take care of them automatically.

Below, you will find guidelines on how to administer video wall content in Ganz CORTROL Client.

### Quick Content Output

Send resources directly to any video wall display. To do this, click the *Expand* button near the resource name in the list on the left and choose *Display on -> Video Wall -> Pick video wall -> Pick display number/name*. Available resources are **layouts**, layout **sequences**, **maps**, and individual **channels**.

To send the currently displayed screen contents to the video wall display, do the same thing from the layout menu in the upper-right-hand corner (above the live view).

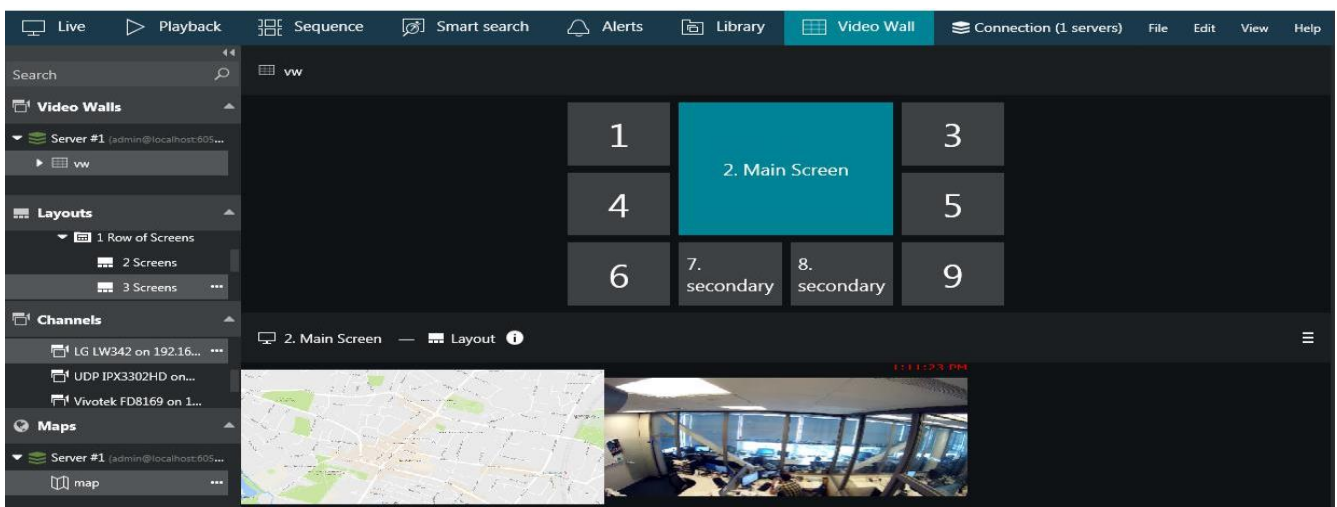


### Advanced Video Wall Management

Switch to the *Video Wall tab* on the upper panel to access advanced video wall management. In this mode, your GANZ CORTROL Client acts as a controlling client for all the video wall members.

Here, in the left-hand panel, all available resources - both local and server-side - are listed. These are:


- **Video walls:** From CORTROL Global servers, a video wall can be expanded to view its displays
- **Layouts:** Layout **templates** and layout **sequences**; both local and shared via GANZ CORTROL Global servers. New sequences are created here by clicking the *Expand* button
- **Channels:** Individual channels from all connected servers
- **Maps:** Fetched from connected GANZ CORTROL Global servers



*Video wall management*

First, drag and drop your desired video wall from the resource list to the upper section of the window. You can drag and drop either the video wall name itself or any of its displays. The video wall display arrangement will appear in the upper part of the window with its corresponding display numbers and names.

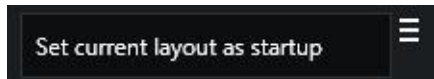
Click any cell to view the current contents of the target display: it will be shown below the video wall arrangement. The title bar of the lower window part will reflect the video wall display number and name, and currently displayed resource type (layout or layout sequence); on the right-hand side of the panel, you will have the layout menu, which will allow you to quickly set the currently shown layout as startup layout for the target video wall display. If the current video wall display has a layout sequence on it, this menu will offer options to set the current layout sequence as startup and to stop the sequence. "Startup" in this context means the start of the Ganz CORTROL server running the target video wall.

 You can set startup layouts and sequences **only** when the Ganz CORTROL Client is connected to the Ganz CORTROL Global server.

This means, under the following circumstances you will be **unable to set startup** contents:

- When a video wall is kept on the Ganz CORTROL Global server but the connection to it is lost (mirror connection still active)
- If your video wall is assigned to one of the Ganz CORTROL Recording servers, but the connection to the Ganz CORTROL Global server is lost


You can still manipulate the video wall contents manually in both cases.



In the lower part of the window, you can manipulate the **contents** of the target video wall display in the same way as you would in the usual live view mode. You can:

- Drag and drop layout templates, layouts, and layout sequences from the *Layouts* section of the *Resources* panel on the left
- Create new layout sequences from the *Layouts* section
- Drag and drop individual channels from the *Channels* section
- Section drag and drop maps from the *Maps* section
- Close channels and maps in the layout by using the *X* button in the upper-left-hand corner of the viewport
- Swap channels and maps within the layout by dragging them by their titles
- Lock channels and maps in their viewports by using the lock overlay control in the upper-left-hand corner
- Digitally zoom channels by using the digital zoom overlay control
- Digitally zoom maps by using your mouse wheel

Indication conventions:

- A currently selected video wall screen is marked **blue green**
- The information icon  next to the layout/channel title shows the name of the user who has placed the corresponding layout/channel: **Hover your mouse cursor** to see the username
- The information icon is highlighted **yellow** for **five seconds** after the corresponding resource has been placed

All changes to the video wall display contents are immediately applied and all other users who are managing the same display at this moment are notified by the highlighted information icon. If selected arrangements are not saved as startup layouts, they will be kept until remote Ganz CORTROL Client applications are restarted.

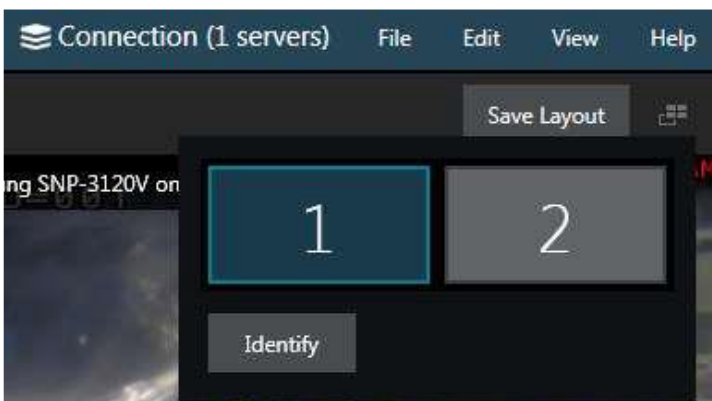


When a Ganz CORTROL Client is connected to a mirroring server instead of a Ganz CORTROL Global server (server color indicator changes from green to yellowish), all the changes you make to the video wall configuration are kept on the mirror server. When the Ganz CORTROL Global machine comes back, all changes are synchronized back to the primary central management server. All this happens automatically and transparently for the Ganz CORTROL Client users.

## Multi-display Setup

Click the *Multi-display setup* button in the upper-right-hand corner of the live view, next to the *Save layout* button, to bring up the display selection menu.

Ganz CORTROL Client automatically detects the computer display configuration directly from the Windows display settings: click *Identify* to display numbers on all the monitors - this is helpful if there are multiple displays. To change your multi-monitor configuration, go to the *Windows Control Panel - > Display -> Screen Resolution*.



*Multiple display selection*

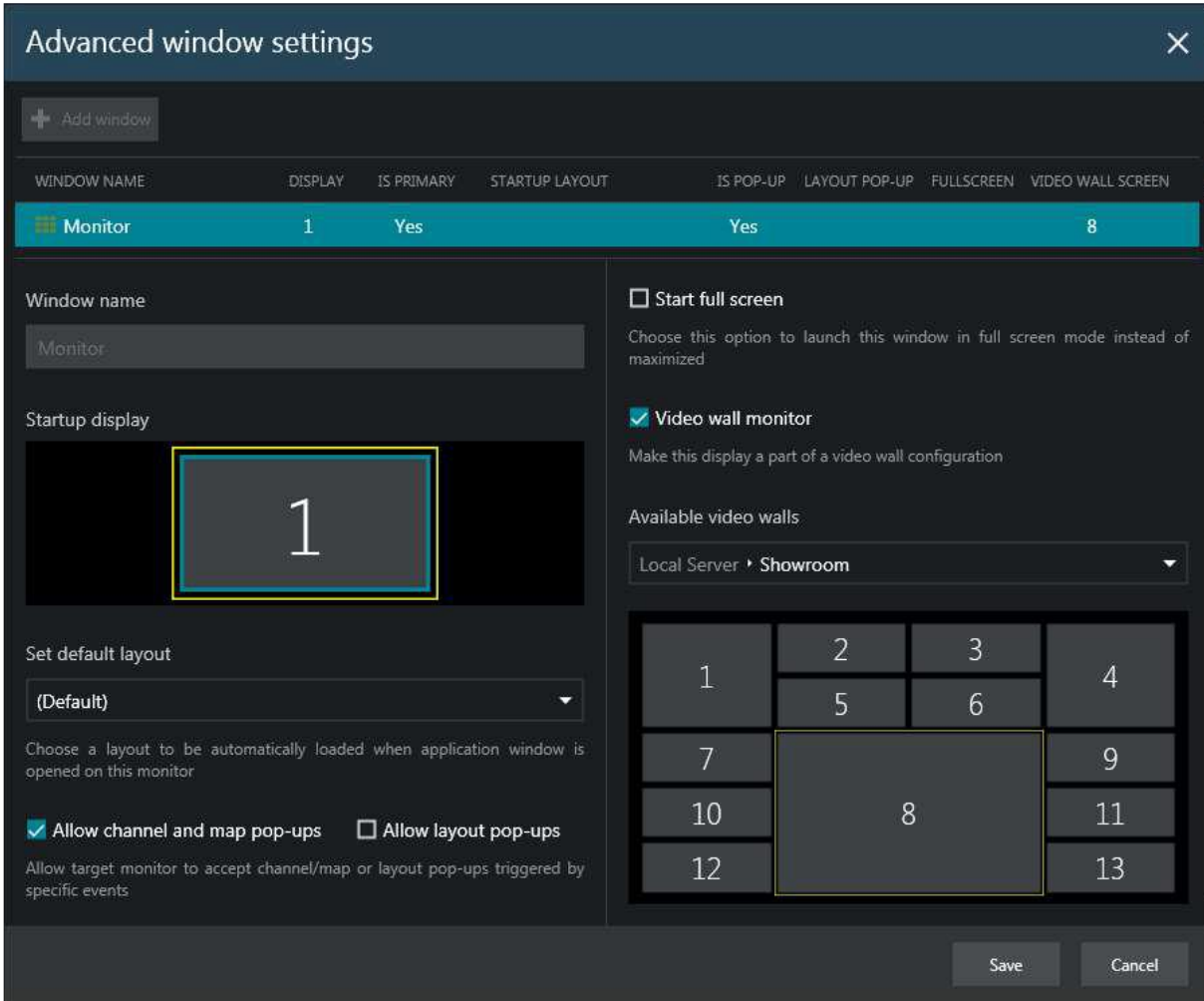
Ganz CORTROL Client automatically detects which screen it is currently on: this display is marked blue, and it is not possible to create any child windows on it. Click on any other empty display (marked gray) to open a new live view window there: The child window will be opened maximized, with the display number shown in the application header. The controls in the upper-right-hand corner give the option to enter full-screen mode or to close the extension windows.

For the multiple display configuration, the following logic is applied:

- The main CORTROL Client application window acts as a parent window, in the sense that:
  - Child windows for extension screens can be created and closed independently
  - When the main application window is closed, all other windows are closed as well
- The main window can be located on any screen
- Only one application window can be opened per screen
- Child windows are maximized to fill all screen
- Child windows do not have menus or panels, just live view mode
- Double-click layouts and/or channels to load them in the main application window
- Drag and drop layouts and/or channels from the main window list to extension monitors

The **advanced window settings** dialog box offers the following possibilities:

- Create windows for the available displays and manage their properties
- Assign default layouts and sequences to Windows (local displays only)
- Bind windows to video wall displays



### Advanced window configuration

In the upper part of the configuration dialog box, you can see the available window list. The main Ganz CORTROL Client window (marked as *Primary*) is always present, and it cannot be deleted or renamed. More windows can be added, the maximum number being limited to the number of displays physically connected to the workstation.

For each window, the following items are displayed in the summary list:

- display number
- primary or not (cannot be changed)
- Startup layout/sequence if set
- channel/map pop-ups allowed or not
- Layout pop-ups allowed or not
- Start in full screen or not
- Video wall screen number if set
- All these settings can be changed below



To add a **new window**, click the + *Add window* button in the upper-left-hand corner (when the number of windows has reached the number of physical displays; the button becomes greyed out). Select the parameters of the new window and click *Save* for the changes to take effect.



If a window is made part of a **video wall**, the **startup layout/sequence** setting will be reset and **greyed out**, as video wall startup settings should be defined in the [video wall management](#) tab.