IVS – Hikvision devices

Table of Contents

1. Introduction, important information 2
2. Add a device 2
3. Register devices 3
4. Manage Devices 4
5. Open device web interface 5
6. Hikvision cameras firmware update 5
7. Change camera name and description 5
8. Select video profiles 5
9. Set up the motion detection 5
10. Manage NVRs 6
    - 10.1. Normal operation mode 6
    - 10.2. Edge Playback mode 6
11. Privacy zones 7
12. Camera navigation 7
13. Camera groups 9
14. Edit camera index list 10
15. Audio settings 10
16. Manage I/O ports 12
17. Camera-side, intelligent device detectors 13
18. SmartSearch: search with post-generated detectors 13
19. SmartLive: server-side, live, Smart MetaData-based detectors 13
20. Further steps 13

1. Introduction, important information

This guide summarizes the registration, management, and configuration of Hikvision devices within the IVS. For a complete overview of the IVS system setup and configuration, please refer to the ***IVS Installation Manual*** documentation.

To register Hikvision cameras, an **OCS** camera license is required. This allows the device's **video/audio channels** to appear in IVS, enabling **dual streaming**, **PTZ control**, and **I/O port management**. To control recordings, the **camera-side motion detection** must be enabled and configured. All settings must be adjusted on the camera's own web interface.

For devices registered using the Hikvision protocol, receiving signals from camera-side detectors is not supported. If detector signal reception is required, enable ONVIF access on the camera's web interface, create an ONVIF user, and register the device in IVS as an ONVIF device. Then, add a **System / Device Event Detector** in **System Configuration / Alarm / Detectors** that matches the detector's signal channel. (For more details, refer to the ***ONVIF Devices*** documentation.)

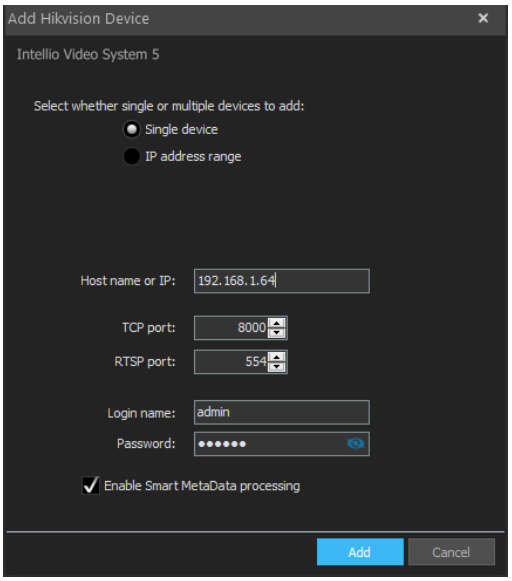
If you want to use **Smart MetaData** processing, post-event **SmartSearch**, or live **SmartLive** functions, an **OCS++** camera license is required. For further conditions, review the **Smart features** documentation.

For **NVR** devices, if you want to use the Edge Storage and Playback mode, you will need **OCS+** camera licenses in the required quantity per enabled camera channel. For more details, refer to the Manage NVRs section.

2. Add a device

Steps to add a Hikvision device:

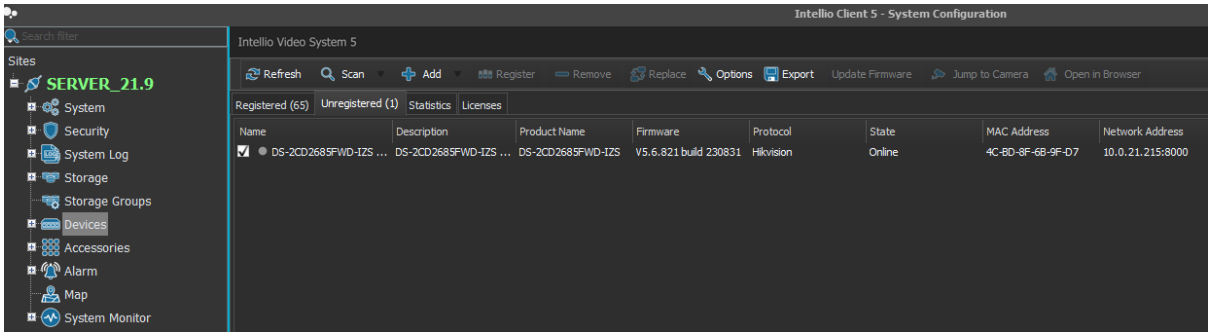
- Press **System Configuration / Devices / Add** button, then select **Add Hikvision Device...**
- Fill in the **Hostname or IP**, **Login Name**, and **Password** fields.
- If necessary, modify the default **TCP Port** and **RTSP Port** values.
- Enable Smart MetaData Processing if you want to use SmartSearch and SmartLive features on the device.



3. Register devices

Every device must be registered on a SITE, and the primary server for the device needs to be specified. The primary server is responsible for storing the images and data of the associated cameras and devices, as well as managing the cameras.

Devices that have been added to the system but are not yet registered can be found under the **Unregistered** tab in the **System Configuration / Devices** menu.



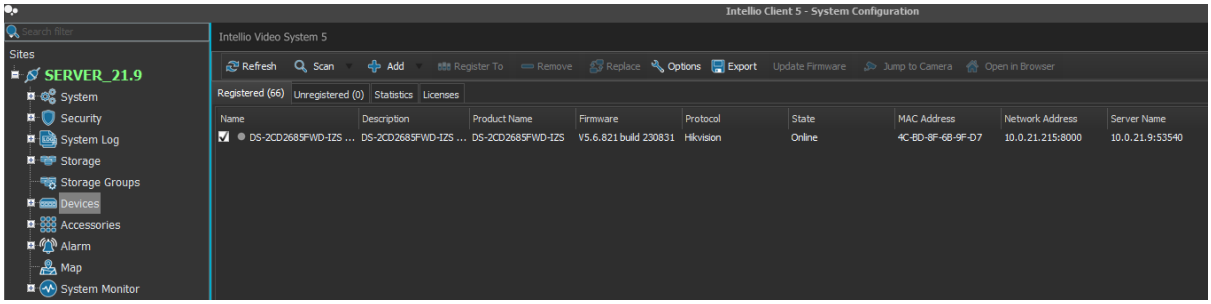
The system maintains partial data flow with the listed and enabled devices, meaning the displayed device information is always kept up to date.

To register a device, select the devices you want to register and press the **Register** button. Before registration, you must enter the username and password required to manage the device. Enter these credentials under the **Connection** tab of the selected device, then press the **Refresh** button. After providing the credentials, confirm the registration.

For multi-server Sites, specify the device's primary server in the pop-up window.

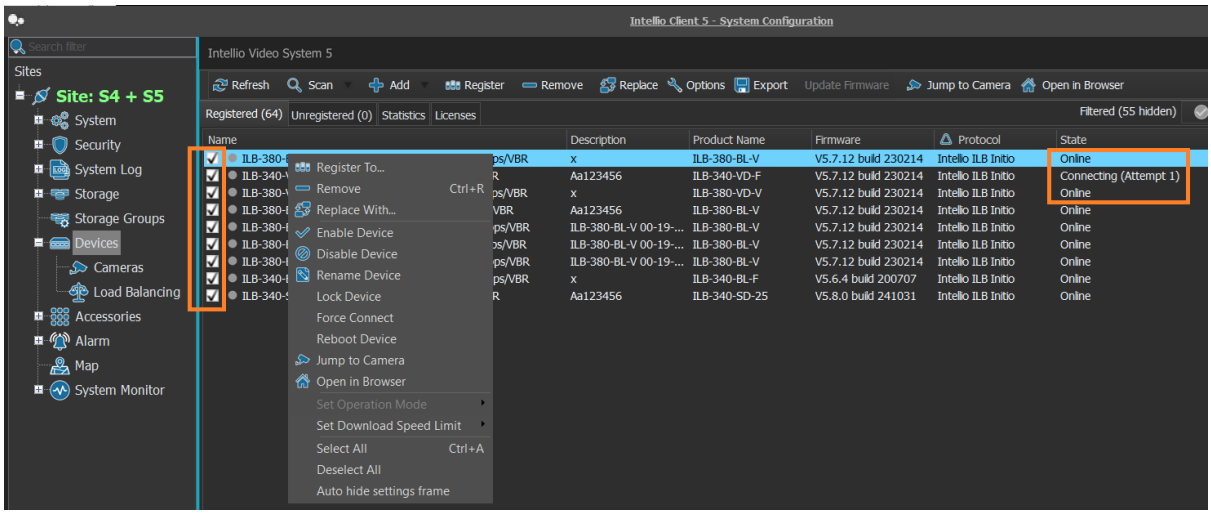
Once registered, the server establishes a connection with the devices, and they start transmitting video.

Registered devices appear under the **Registered** tab.



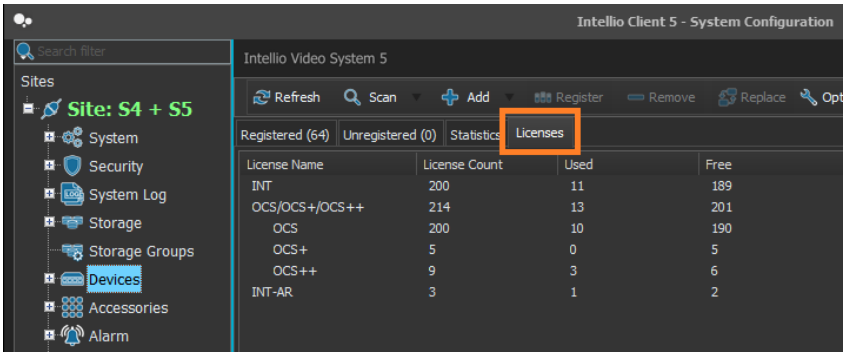
4. Manage Devices

The checkmark next to a device name in the **System Configuration / Devices** menu indicates that the device is enabled, and the server is either maintaining or attempting to maintain a connection with it. If the connection is successful, the Status column will display Online. If the connection is unsuccessful, the Status column will show an ongoing connection attempt.



You can click the checkmark with the left mouse button to toggle the device between enabled and disabled states. Alternatively, you can right-click the device and select **Enable Device** or **Disable Device** from the pop-up menu.

If a device is disabled, the server does not maintain a connection with it, live footage cannot be displayed from the device, and no images are stored. However, previously recorded footage from the device can still be played back. In the disabled state, the device does not consume camera licenses, the quantity of which can be checked under the Devices menu / **Licenses** tab.



If the server continuously fails to connect to a device, the number of attempts will gradually decrease over time. If necessary, an immediate attempt can be forced using the **Force Connect** option in the pop-up menu.

The selected device can be replaced with another device registered with the same protocol using the **Replace With...** option in the pop-up menu or the **Replace** button in the top button bar. Before selecting this function, add the device you want to replace the selected device with to the **Unregistered Devices** list.

5. Open device web interface

Most Hikvision device have their own web-based configuration interface. This interface can be accessed directly from the IVS by pressing the **Open in Browser** button in the **System Configuration / Devices** menu. This button opens the device's web interface in the default browser with a single click.

The device's web interface is accessible only if the device is reachable from the computer running the client program. It must be accessible from the client program running on the server, but it can be accessed from any location only if the appropriate network settings are in place.

6. Hikvision cameras firmware update

You can update the FW of Hikvision cameras via the camera's web interface.

7. Change camera name and description

To edit the name and description of an already registered camera, navigate to the **System Configuration / Devices / Cameras** page. Select the camera, go to the **Name and Description** tab, edit the fields, and then press the **Apply** button in the bottom right corner.

8. Select video profiles

In the **System Configuration / Devices / Cameras** menu, under the selected camera's **Profile Settings** tab, you can configure two **Monitoring profiles** and a **Storage profile**.

The device registration automatically includes the most optimal configuration. For the Live and Storage profiles, the primary, high-resolution video channel is selected, while for the Low-Resolution Live profile, the secondary, low-resolution video channel is chosen. This ensures that if the client program displays the camera image in a small window, it will use the low-resolution video stream, optimizing the use of computing resources on the client program's host machine.

- **Monitoring profile** refers to the high-resolution primary stream displayed in Live mode when the camera's display panel is in SPOT mode.
- **Monitoring profile (low resolution)** denotes the secondary low-resolution stream displayed in Live mode when more than 4 divided Views are selected, or when performance optimization is enabled in client settings and the panel is not in SPOT mode.
- **Recording profile** determines the stored images' resolution, image quality, and frame rate. It usually aligns with the primary high-resolution stream. The option <**Same as Monitoring**> refers to the stream specified there.

9. Set up the motion detection

The registered camera’s recordings will automatically be stored based on the camera-side motion detection signal. Make sure to enable and configure motion detection on the camera's web interface.

10. Manage NVRs

When connecting an NVR device, the following features are available:

- Adding, registering, and managing NVRs, including enabling or disabling individual NVR channel inputs based on usage
- Configuring encoder profiles for each channel
- Managing and displaying live video feeds
- Normal operation mode: Storing video streams on the IVS server and replaying them from the IVS server via the IVS client
- Edge Playback mode: Storing video streams on the NVR's built-in storage and playing back recordings directly from the NVR storage via the IVS client's playback interface
- Audio channels from cameras and Smart features (such as SmartLive detectors and SmartSearch) are not accessible through the NVR

10.1. Normal operation mode

When an NVR device is registered, the IVS system automatically handles it in Normal Operation Mode, similar to a standard camera. The recording of camera channel footage on the IVS server will follow the settings configured for Encoder, Motion Detection, and Storage Group.

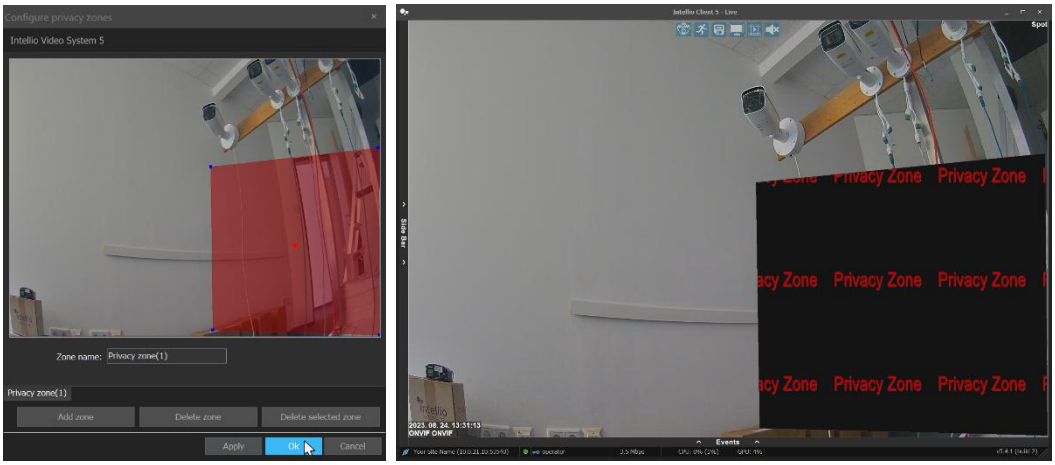
10.2. Edge Playback mode

In Edge Playback mode, video footage is stored on the NVR's own storage unit, so the playback is served from the NVR storage. The IVS client playback interface can be used in the traditional way to view recordings stored on the NVR. However, positioning, jumping between different time points, and communication with the NVR API may occasionally be slower compared to playback from an IVS server. For efficient playback, consider the following:

- While performing actions, monitor the status information displayed in the bottom status bar of the client, and only give another command when the status bar indicates that the previous command has been completed.
- Upon entering the playback interface, the timeline will immediately begin drawing, and the image corresponding to the current time will be displayed. However, if you access the playback interface using the **Jump to Instant Playback** button on the camera live feed panel, it is possible that the image may not yet be stored by the NVR, or the storage file may not have been finalized, making it unreadable. Therefore, it is recommended to configure the NVR storage settings to determine how much earlier footage can be played back immediately.
- When selecting footage for playback from the camera, a few minutes' worth of video footage, or a few frames, will be temporarily downloaded starting from a few seconds earlier than the currently set playback time. The download happens to the IVS server's memory, and playback from the client is supported from there. This allows for immediate playback forward and stepping forward/backward by a few frames. As playback moves forward, the download of additional footage continues seamlessly, ensuring continuous playback before the end of the downloaded footage is reached.

11. Privacy zones

By using privacy zones, certain areas of the displayed images can be hidden from users, ensuring that only those with the appropriate permissions can view the full images without privacy zones. To create a privacy zone, go to **System Configuration / Devices / Cameras**, select a camera, then go to its **Privacy Zones** tab and click the **Configure Privacy Zones** button. Draw around the area to be hidden and define one or more masks. When logged in with a user with restricted permissions, such as the default **Operator** user, by default, the content behind the masks will not be visible.



12. Camera navigation

Efficient navigation among cameras can be achieved using the camera navigation feature, with clickable arrows displayed on the camera images. Navigation is camera-independent, so it can be used with any camera. To set up navigation, select the specific camera in the **System Configuration / Devices / Cameras** menu, then choose the **Navigation** tab among the camera functions, and press the **Configure Navigation** button.

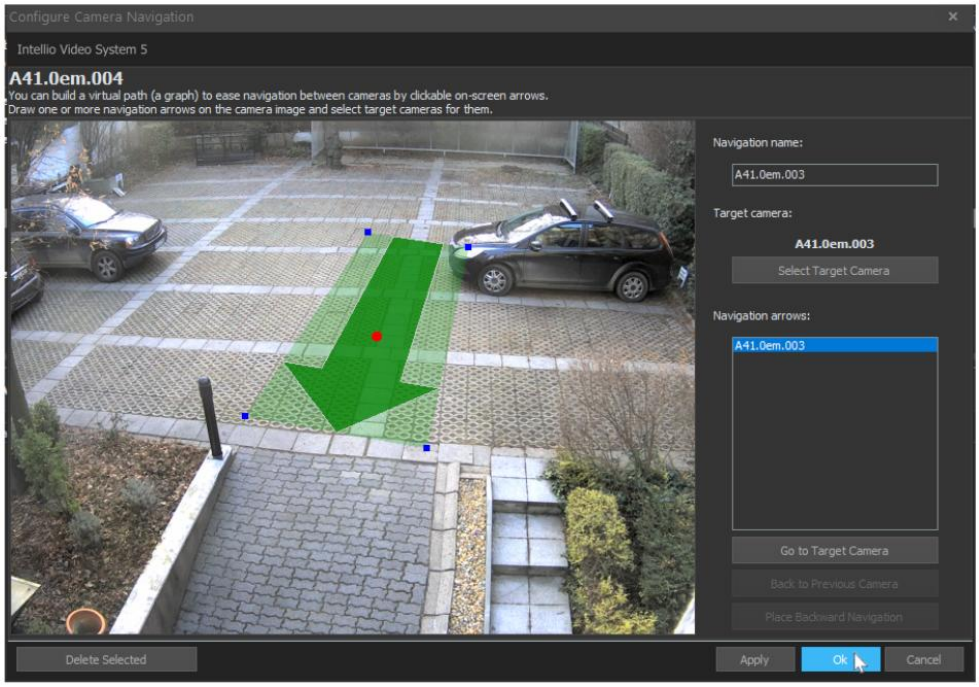
In the **Configure Camera Navigation** window, the live view of the selected camera is displayed, along with any arrows that may have been added. At the top, you can see the name of the currently edited camera, and on the right side, there are control elements used for modifying the settings.

Edit navigation arrows

To select a previously placed arrow, simply left-click on the bounding area or choose the specific arrow from the **Navigation arrows** list on the right side. The active, selected arrow is indicated by a red dot in the center.

For drawing a new arrow, move the mouse pointer to the desired starting point of the arrow. While holding down the left mouse button, draw the arrow in the desired direction. When you release the left mouse button, the arrow will be placed and simultaneously selected.

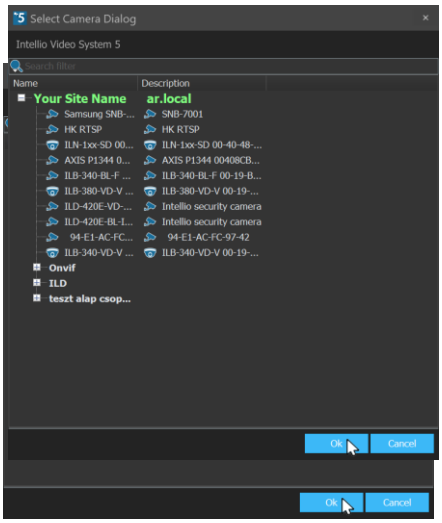
You can adjust the size of the selected arrow by dragging the corners or edges of the bounding rectangle with the left mouse button. To change the position of the arrow, move the bounding area while holding down the left mouse button to the desired position.



Navigation name

The **Navigation name** field allows you to enter a label that will appear on the live image when you hover the mouse pointer over the arrow. This display can be toggled on and off from the camera menu. If you don't enter anything, the default label will be the name of the selected target camera.

Target camera



The target camera refers to the camera that will appear when you click on the respective arrow. In the window that appears after pressing the **Select Target Camera** button, choose the desired camera, and then press the **Ok** button.

Navigation arrows

In the list, all arrows placed on the specific camera are visible by name, making it easier to identify and select the arrows.

Go to Target Camera

Using the **Go to Target Camera** button, you can jump to the target camera assigned to the currently selected arrow. This function is useful when you want to create a route starting from one camera.

Back to previous camera

If the camera image displayed in the editor window is already a result of navigation, you can use the **Back to Previous Camera** button to return to the camera from which the navigation occurred.

Back arrow placement

If the camera image displayed in the editor window is already a result of navigation, you can use the **Place Backward Navigation** button to place an arrow to the camera from which the navigation occurred. The target camera and name of the navigation arrow created in this way are automatically set, but can be modified later. If there is already a navigation arrow for that camera, the button is disabled.

Delete selected

The **Delete Selected** button can be used to delete the active, selected arrow.

Note: *PTZ control takes precedence over camera navigation, so navigation does not work with arrows placed in the PTZ control circle. If you want to place a navigation arrow on a PTZ camera, be sure to place it outside the PTZ control circle.*

13. Camera groups

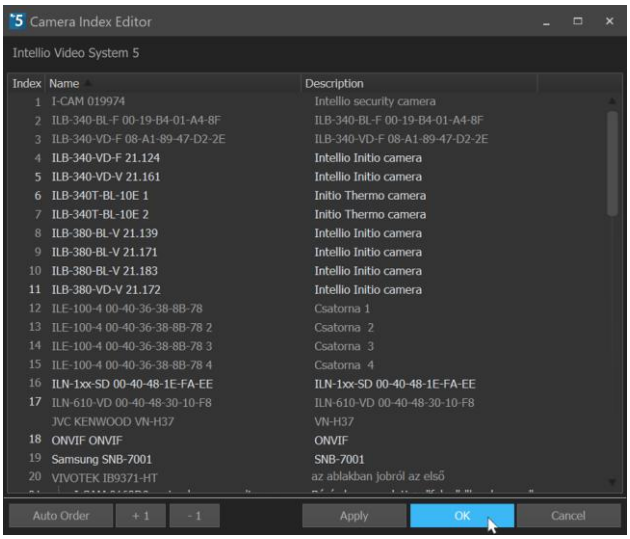
The cameras can be organized into groups based on certain characteristics, greatly facilitating their overview; for example, cameras located on different levels can be placed in separate groups. To create a group, press the **Create Group** button in the **System Configuration / Devices / Cameras** menu, then enter the name of the new group.

Cameras within the groups can be freely moved by right-clicking on the selected camera, selecting the **Move Cameras to...** option from the pop up panel, and then choosing the target group where you want to move the camera. To change the order of cameras within a group, use the two options above the **Move Cameras to…** button (**Move Up, Move Down**).

The groups themselves can also be sorted. Right-click on the group name, then use the options in the menu that appears to rearrange the order of the groups, or even create subgroups that can be sorted separately. It is also possible to grab the group with the mouse and drag it to the desired location.

To delete a group, first move all the cameras within it to another group, then select the group name, right-click, and choose the appropriate option from the menu.

14. Edit camera index list



In the **Camera Index Editor** window, you can assign a number to each camera. During live display, entering the index number allows you to view the camera's video stream. This method is faster than dragging the camera with the mouse from the left panel. More information about using index numbers can be found in the ***User Guide***.

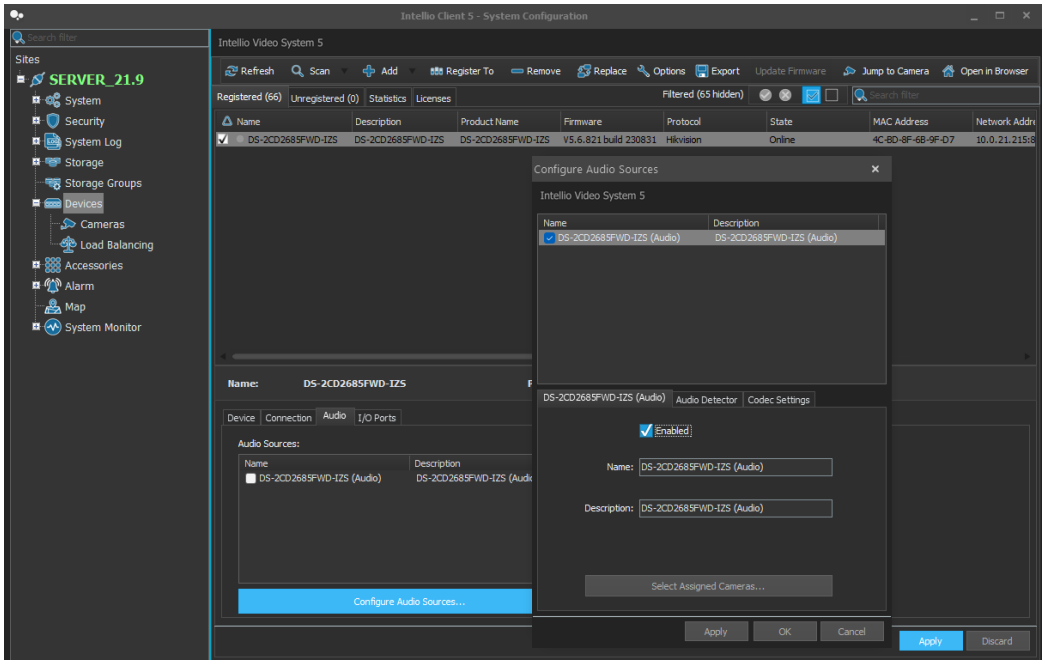
The Camera Index Editor can be opened by pressing the **Edit Index List** button in the **System Configuration / Devices / Cameras** menu.

The easiest way to assign index values is to use the **Auto Order** button. This automatically assigns a number to each camera in increasing order, overriding previous settings. The order can be changed by clicking on the camera's index, then editing it to the desired number. You can also use the **+1** and **-1** buttons to increase or decrease the index value by one. The client program prevents two cameras from having the same index value. If this happens, the names of the problematic cameras will be highlighted.

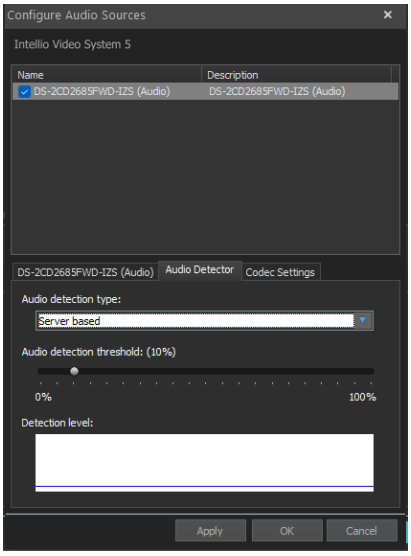
15. Audio settings

The main settings for audio inputs are located in the specific device settings. Navigate to **System Configuration / Devices** menu, select the device, and on the device configuration interface that appears at the bottom, click on the **Audio** tab. Here, you will get an overview of the names and status of the audio inputs associated with the device. To modify the settings, press the **Configure Audio Sources** button.

- **Enabled:** This checkbox is used to enable/disable the audio input. If an audio input is not in use, you can disable it here to prevent the system from processing it. In this case, it is advisable to disable the audio channel in the camera's web interface as well.
- **Name** and **Description:** Here, you can provide a name and a detailed description for the audio input.
- **Select Assigned Cameras:** You can choose which cameras you want to hear the audio input with. This is relevant during live view and playback. Multiple cameras can be selected, with the audio initially assigned to its own camera by default. If you don't select a camera, the audio channel will appear separately in the Audio Channels toolbar, where you can toggle it on/off and adjust the volume.



- **Audio Detector:** Specifies the type of audio detector used for storage.
    - **Disabled:** No audio recording takes place, but audio can still be monitored on the Live View interface.
    - **Continuous:** Continuous audio recording.
    - **Server based:** In this case, the detection threshold can be set as a percentage. The currently detected audio strength and the set threshold are continuously displayed at the bottom of the window.

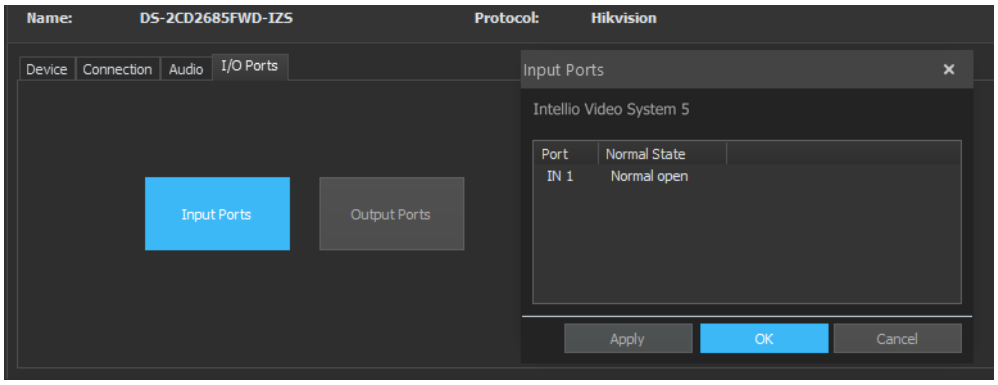


- **Codec Settings** tab: the supported audio formats of the camera can be configured.
    - G.711 PCM u-Law/A-Law (8000 Hz)
    - G.726 ADPCM-16/24/32/40 Kbps (8000 Hz)

16. Manage I/O ports

In the **System Configuration / Devices** menu, select a Hikvision camera and go to the **I/O Ports** tab. Use the **Input Ports** or **Output Ports** button to open the configuration window. Here, you can set the default values for the input and output ports.

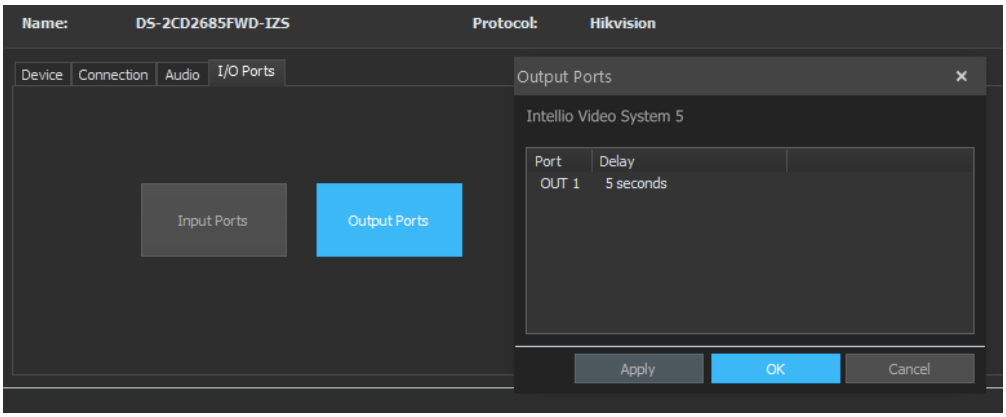
Input



To receive input signals, a **Multi I/O Input** detector must be created:

- Navigate to **System Configuration / Alarm / Detectors** menu
- Click the **Add** button, select a **System**-type detector, choose **Multi IO Input**, then click **Finish**
- In the **Create Multi IO input** window, go to the **Detector** tab, select the desired port, and configure the additional detector parameters. For more details, refer to the ***System detectors and the IVS alarm system*** documentation.

Output



Output control is managed through **Multi I/O Actions**:

- Navigate to **System Configuration / Alarm / Actions** menu
- Click the **Add** button, select **Multi IO Action**, then click **OK**
- In the **Create Multi IO action** window, go to the **Action** tab, check the desired port, and configure the additional action parameters. For more details, refer to the ***System detectors and the IVS alarm system*** documentation.

17. Camera-side, intelligent device detectors

For a device registered using the Hikvision protocol, receiving signals from camera-side detectors is not supported. If detector signal reception is required, enable ONVIF access on the camera's web configuration interface, create an ONVIF user, and register the device in IVS as an ONVIF device. Then, in **System Configuration / Alarm / Detectors**, add a **System / Device Event Detector** corresponding to the detector signal channel. (For more details, refer to the ***ONVIF devices*** documentation).

18. SmartSearch: search with post-generated detectors

Some Hikvision cameras can track people, vehicles, and other categorized objects moving within their monitored area. These metadata are also transmitted to the IVS server, which can store them for later use. Stored metadata can be searched quickly using **Virtual Detectors** created afterward.

The conditions for searching with Virtual Detectors can be found in the ***Smart features*** documentation, while information on creating Virtual Detectors and using the **Intelligent Motion Search** and **Intelligent Object Search** interfaces is available in the ***User's manual***.

19. SmartLive: server-side, live, Smart MetaData-based detectors

Based on the metadata of moving objects detected by certain Hikvision cameras, server-side **SmartLive** detectors can be created for Motion Detection, Area Entry/Exit, Direction Detection, and Line Crossing events, triggering immediate alerts. The object category information detected by the cameras can be expanded or validated using the **SmartAI** function.

For detailed information on SmartLive detectors and basic requirements, refer to the ***Smart features*** documentation.

Depending on the settings, when a detector triggers an event, the event is logged in the Event Log, the client software may play an audio notification, display camera images, etc. If additional actions are required (e.g., jumping to a PTZ preset, sending an email), the **complete alarm system** must be configured in addition to adding the detector. This includes creating Partitions and Actions (see ***System detectors and the IVS alarm system*** documentation).

20. Further steps

For an overview of additional system settings, please refer to the ***IVS Installation Manual*** documentation.