IVS - ONVIF devices

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1. Introduction, important information

In this guide, we have summarized the registration, management, and settings of devices capable of ONVIF communication within the IVS. For a complete overview of the IVS system setup and configuration, please refer to the ***IVS Installation Manual*** documentation.

To register devices capable of ONVIF communication, ensure that you have sufficient **OCS** camera licenses in the IVS server product key for the number of video/audio channels you wish to register in the system. If you do not have the appropriate number of OCS licenses, you can expand the product key as described in the ***System management*** documentation.

When managing an ONVIF-compatible device in IVS, the following steps must be completed:

- Search for or manually add the camera, then **register** it in IVS,
- Set up **motion detection** to control recording - preferably use the camera-side motion detector,
- Configure a low-resolution **secondary video stream** to reduce unnecessary load on client workstations when using small panels,
- Define the desired camera-side or server-side detectors.

Some general parameters of ONVIF-compatible devices can be configured directly from IVS (image quality, encoder, audio, I/O ports); however, it is recommended to perform the device settings through the device's web interface.

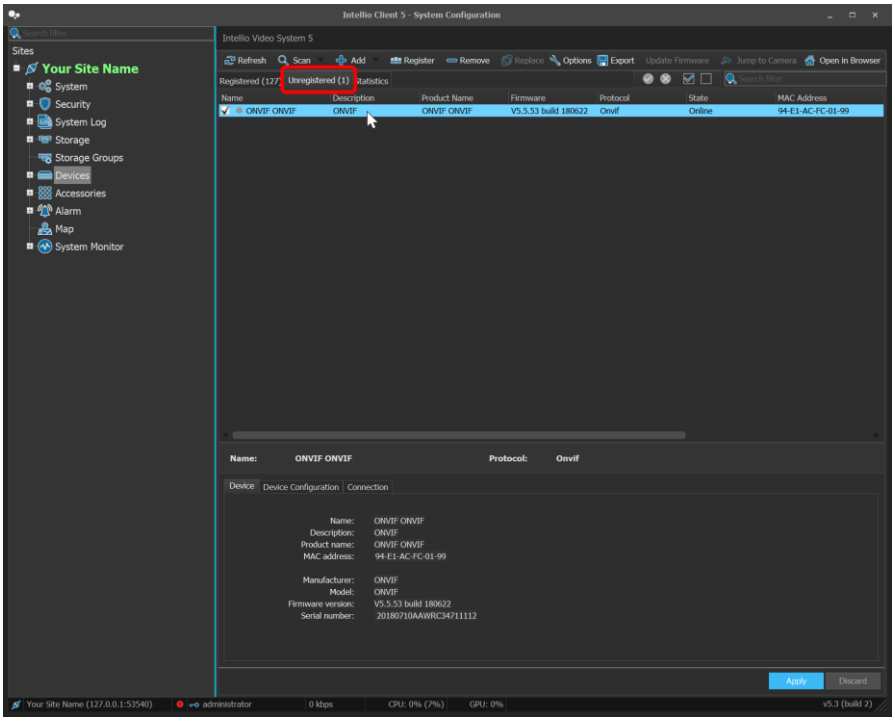
It is also advisable to configure the following useful features to create an efficiently usable system:

- Name the camera,
- Organize cameras into groups,
- Assign index numbers to the cameras to simplify system use with keyboard shortcuts,
- If needed, set up privacy zones in the image,
- Add navigation arrows to allow operators to easily switch between cameras.

2. Exploring devices, cameras

2.1. Automatic search on the network

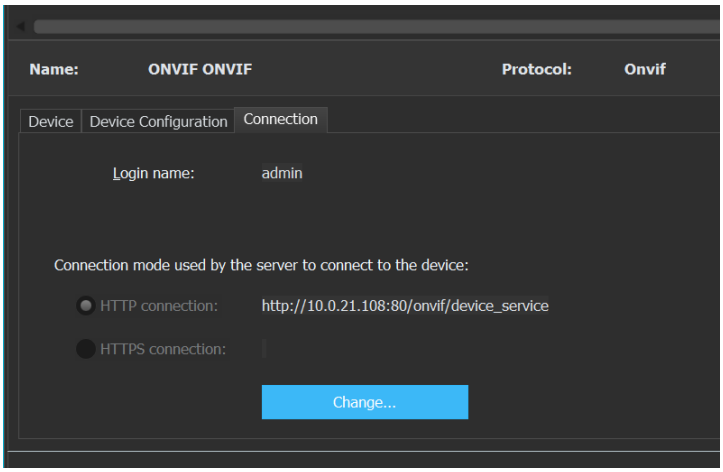
The Intellio Video System can search for ONVIF-compatible devices on the subnetworks accessible by the server. Devices detected through **System Configuration / Devices / Scan / Search ONVIF Devices** can be found in the **Unregistered panel**.



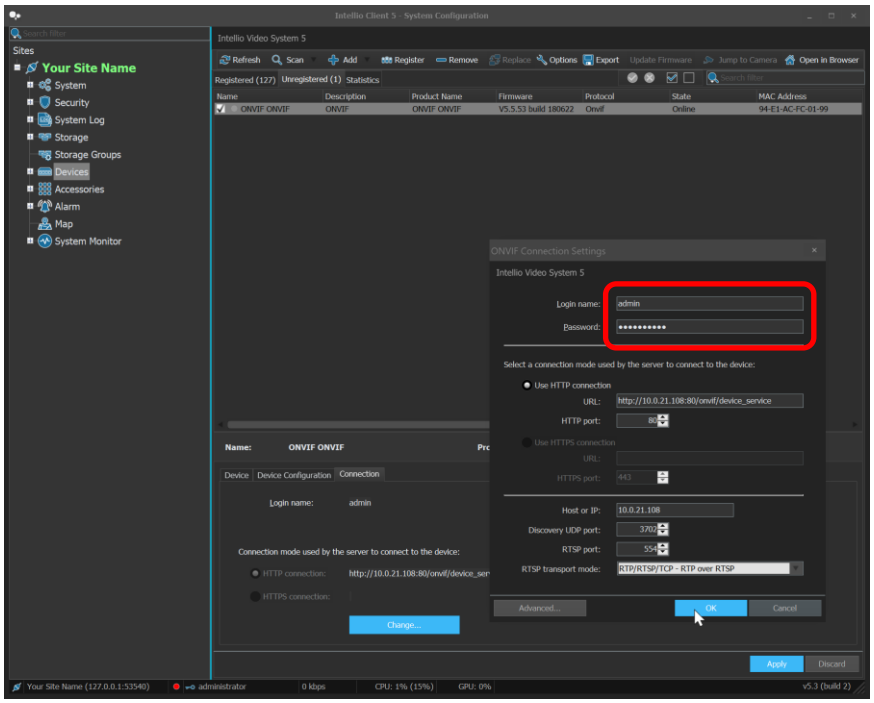
Some devices found during the search may not provide data due to missing identification, resulting in <unknown> devices appearing in the list. This means authentication is required for the device connection. For certain devices, this authentication may differ from the one used by the device's web interface or its proprietary protocol. In such cases, enable ONVIF access in the device's web interface and create a username and password for the ONVIF connection with administrator privileges.

Authentication may not be required for the connection (in this case, the camera information will appear in the list). If no authentication is needed, do not enter a username or password.

To identify an unknown device, select it from the list and open the **Connection** tab. Under the HTTP Connection section, the URL will be displayed, including the device's IP address. Entering this URL in a web browser will open the device's web interface, allowing you to identify the device. Another option is to open the device's web interface as described in the Open device web interface section.

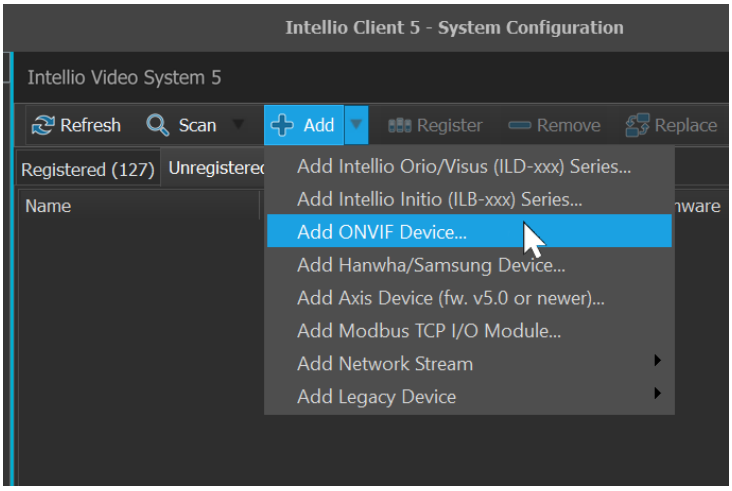


Then select the **Change** button and enter the login name and password for that device.

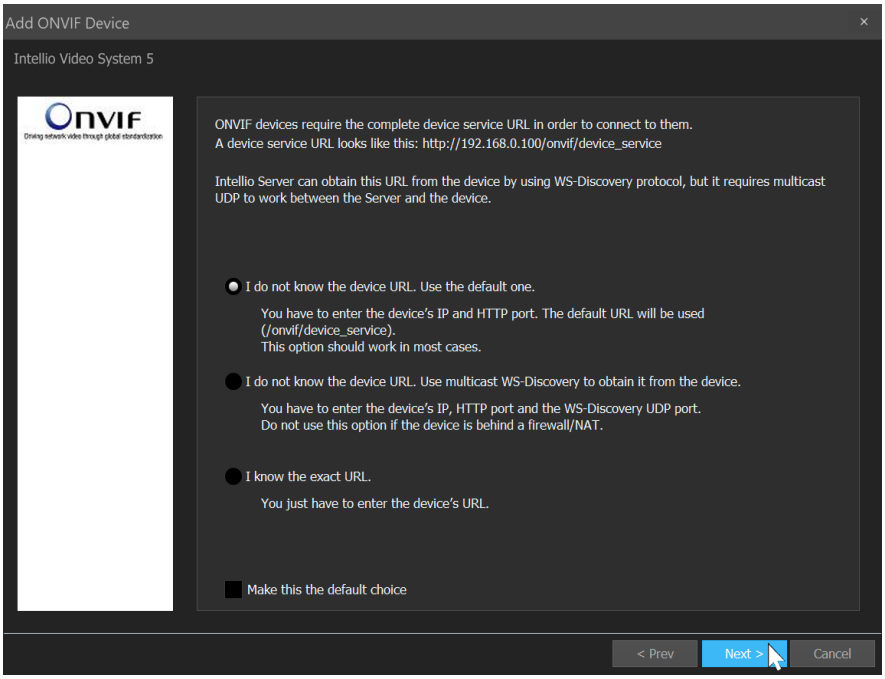


2.2. Add manually

If the IP address of the ONVIF device you want to add is known exactly, use the **System Configuration / Devices / Add / Add ONVIF device...** button.



- In the pop-up window, select the first option (**I do not know the device URL. Use the default one**), and then click the **Next** button. This option works in most cases.
- In some cases, the default URL settings may not work for certain devices due to non-standard URL accessibility. In this case, use the second option to query the device's URL (be sure that the server computer and the device IP address are in the same network segment).
- If the URL is known or in a unique format, use the third add option.

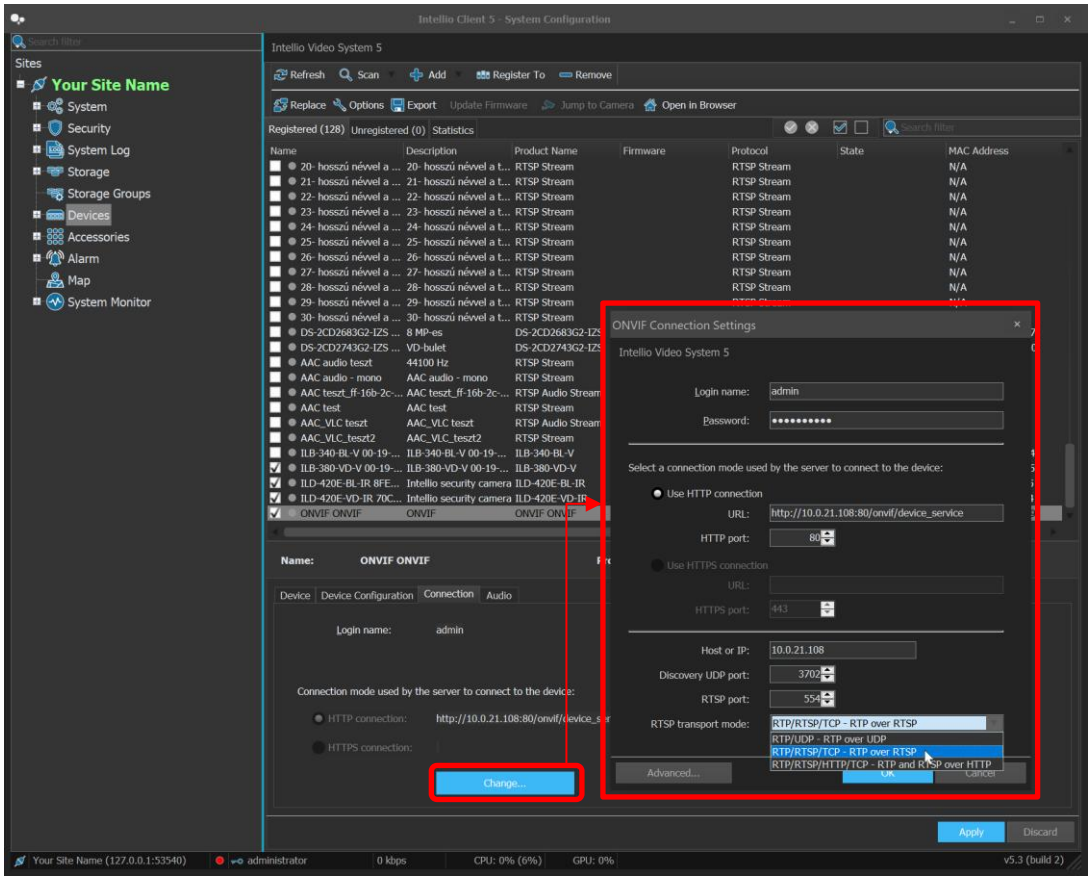


Enter the name or IP address of the device in the **Host or IP** field, and then fill in the **Login Name** and **Password** fields for the device.

The **RTSP transport mode** determines the transmission channel used for both image and audio transmission:

- Choose **RTP over RTSP** (default) functionality if images arrive over a reliable TCP connection, allowing the device to be used behind a firewall or NAT.
- Select **RTP over UDP** option if the device does not display images, possibly because it does not support the default mode. In this case, images arrive over a UDP connection, but the device cannot be behind a firewall/NAT.
- It is recommended to use **RTP and RTSP over HTTP** when the device is behind a firewall that only allows HTTP connections.

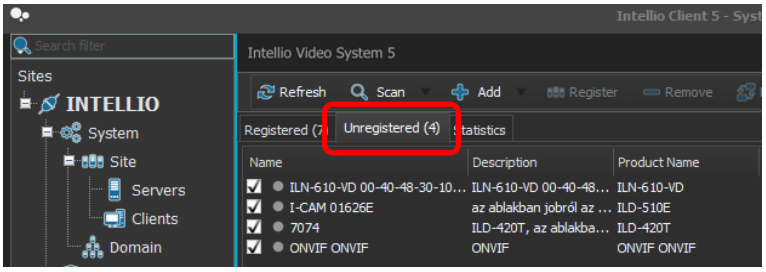
Leave the other values at their default settings, or modify them if you are not using the default port numbers.



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.



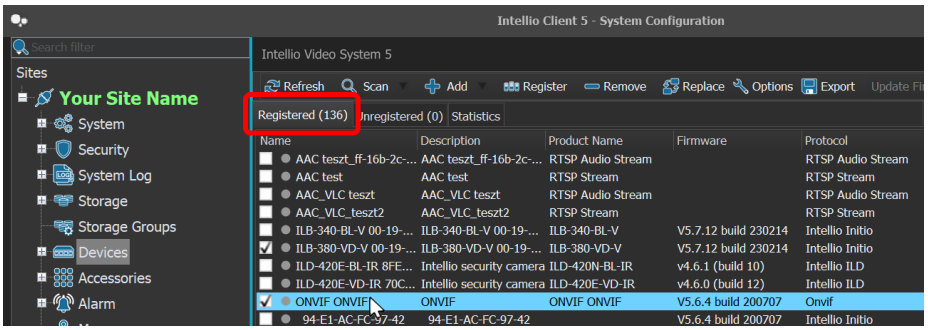
The system maintains partial data flow with the listed and enabled devices, meaning the displayed device information is always kept up to date.

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.

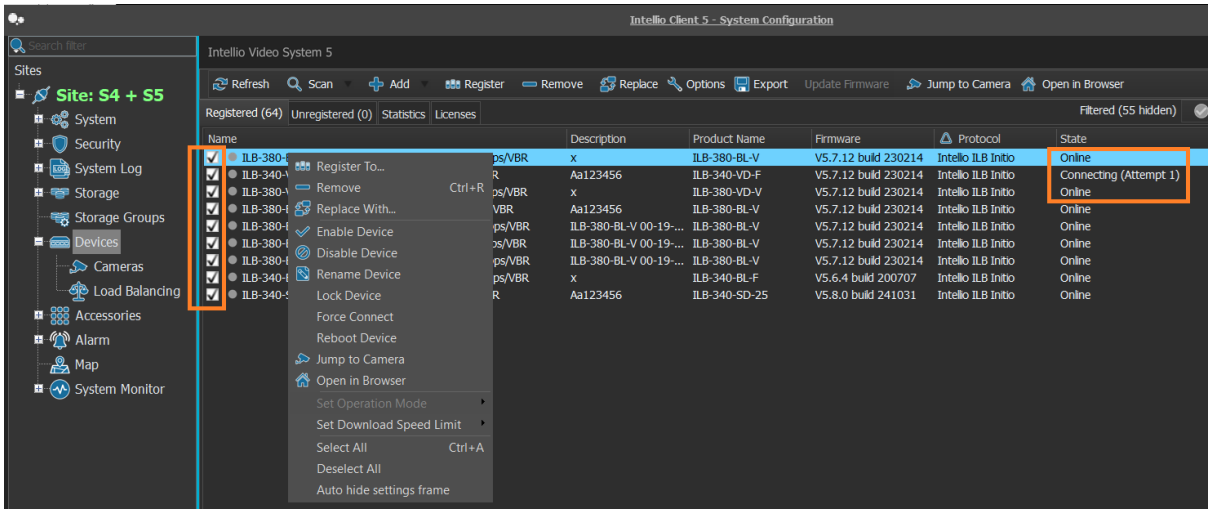
Once registered, the server establishes a connection with the devices, and they start transmitting video.

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



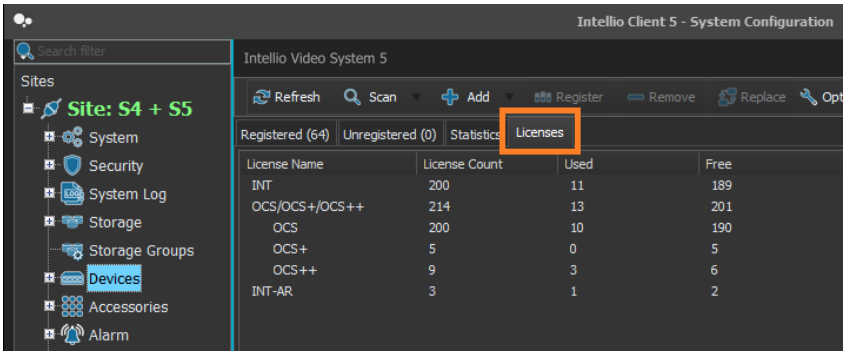
4. Manage Devices

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.

During device replacement, the device-side detectors are not transferred and will become inaccessible afterward, potentially displaying error messages if activated. This is because the device-side detectors were assigned to the replaced device. Server-side detectors will continue to function without issues after the replacement.

5. Open device web interface

Most devices 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. Change camera name and description

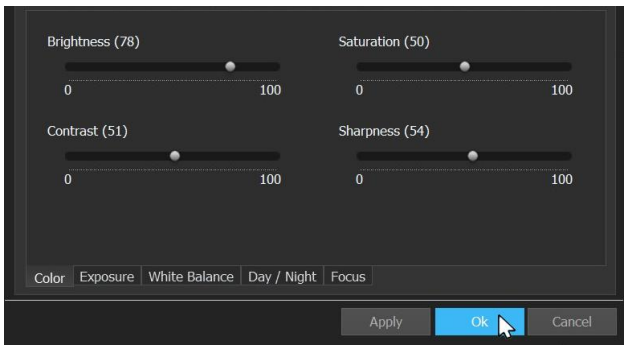
To edit the name and description of an already registered camera, navigate to the **System Configuration / Devices / Cameras** page. Select the camera, go to the **Name and Description** tab, edit the fields, and then press the **Apply** button in the bottom right corner.

7. Set up video image

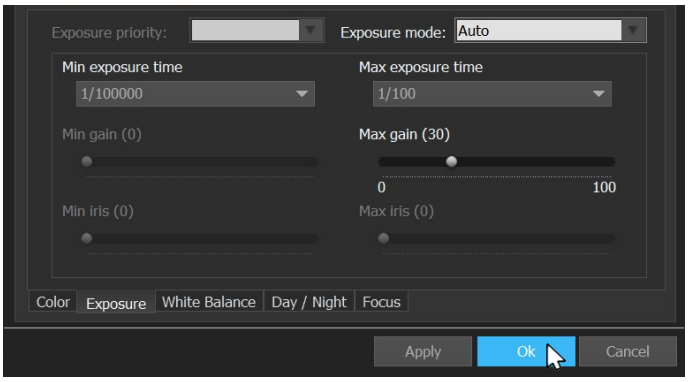
Excellent image quality is a fundamental requirement for video surveillance. Good image quality can be achieved by adjusting the image settings to suit the observed location. To modify the image settings, go to the **System Configuration / Devices / Cameras** menu, select the camera, and press the button under the **Image Setting** tab. Alternatively, if you are viewing a live feed, choose the same option from the camera menu. This interface allows you to modify only the most commonly used parameters. For settings not present or adjustable in this window, open the camera's web interface and make the adjustments there.

7.1. Color

- **Brightness:** Adjusts the overall brightness of the image.
- **Saturation:** Controls the saturation of colors.
- **Contrast:** Modifies the contrast between colors. Higher values increase contrast, but the displayed image may darken as a result.
- **Sharpness:** Alters the sharpness of the displayed image.



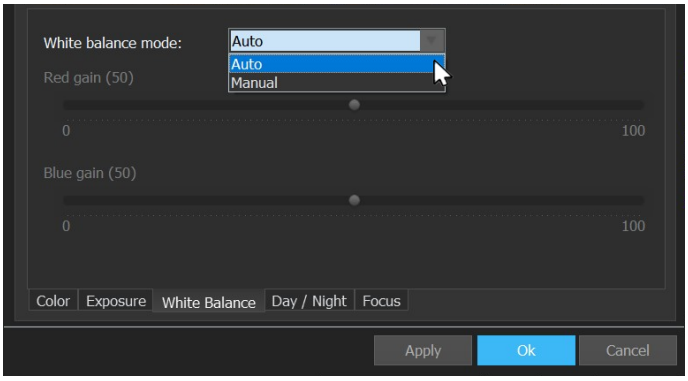
7.2. Exposure



- **Minimum exposure time:** Specifies the maximum shutter speed value, ensuring it cannot be lower than the set value. Setting a slow exposure speed brightens the image, but fast movements may become less defined.
- **Maximimum gain:** Determines the maximum allowable gain value. Higher gain enhances visibility, but it may introduce more noise to the image.

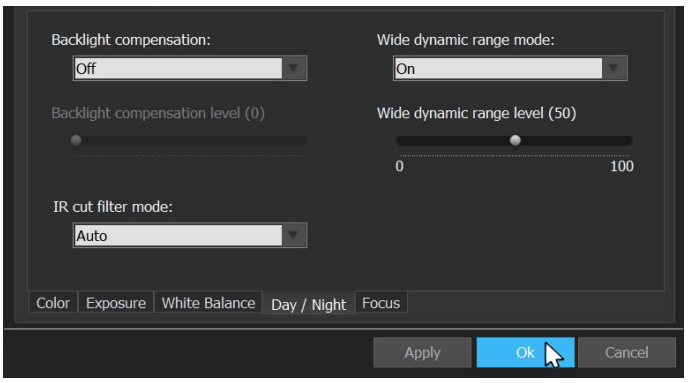
7.3. White balance

White balance ensures that the images have accurate colors. By default, it is set to automatic. If you want to change it manually, set it to manual and adjust the desired value using the sliders below.



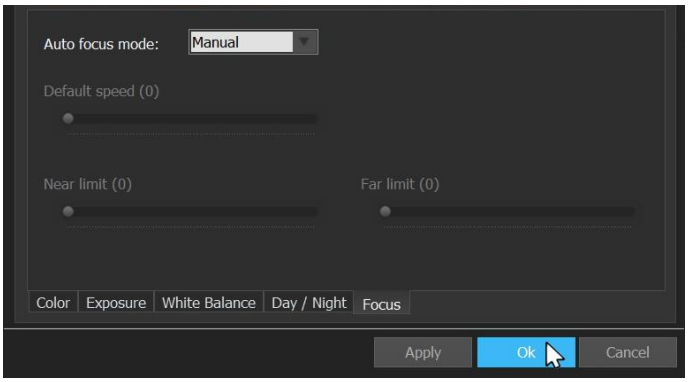
7.4. Day/Night

The parameters related to the **Night/Day mode** switch, as well as the values for **Backlight Compensation** and **WDR** modes, can be adjusted in this settings window



7.5. Focus

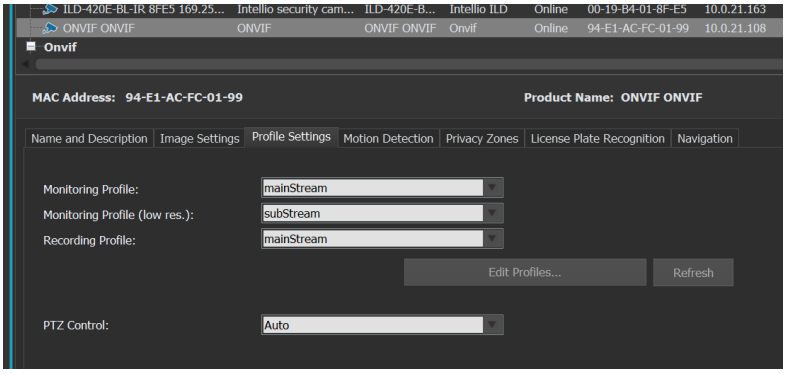
The focus adjustment mode can be set. In Auto mode, after zooming in or out, the camera automatically adjusts the image sharpness.



8. Profile settings

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**:

- **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.



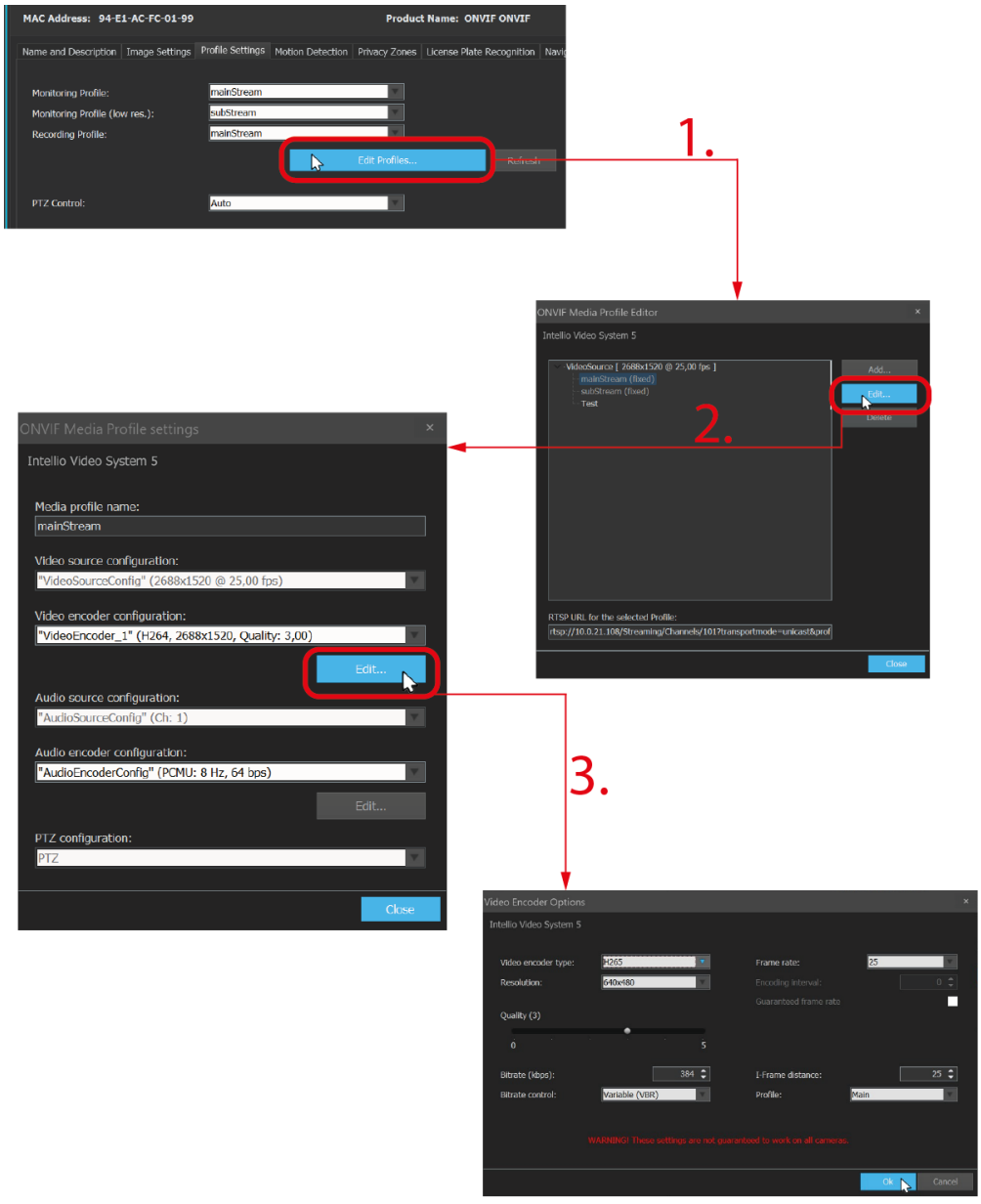
By default, all three profiles are set to use the camera's primary video stream channel. However, it is recommended to also utilize the secondary low-resolution stream. This way, if the client program displays the camera image in a small window, it can use the low-resolution video stream to better utilize the resources of the computer running the client program.

These profiles can be adjusted as desired from the dropdown list or created and modified using the **Edit Profiles** button on the tab, as explained in the following section.

PTZ control: In the case of an ONVIF camera, IVS determines whether the camera supports PTZ functionality based on the Monitoring profile's PTZ setting. However, there is an option here to override this behavior (Automatic/Enabled/Disabled).

8.1. Edit Media profile

To edit the profiles of already added ONVIF cameras, navigate to the **System Configuration / Devices / Cameras** menu. Select the ONVIF camera, go to the **Profile Settings** tab, and use the **Edit Profiles**... button to open the configuration window. By default, one stream is set up, but it is recommended to configure two streams: mainStream for monitoring and storage, and subStream for low-resolution display, as described in the previous section.

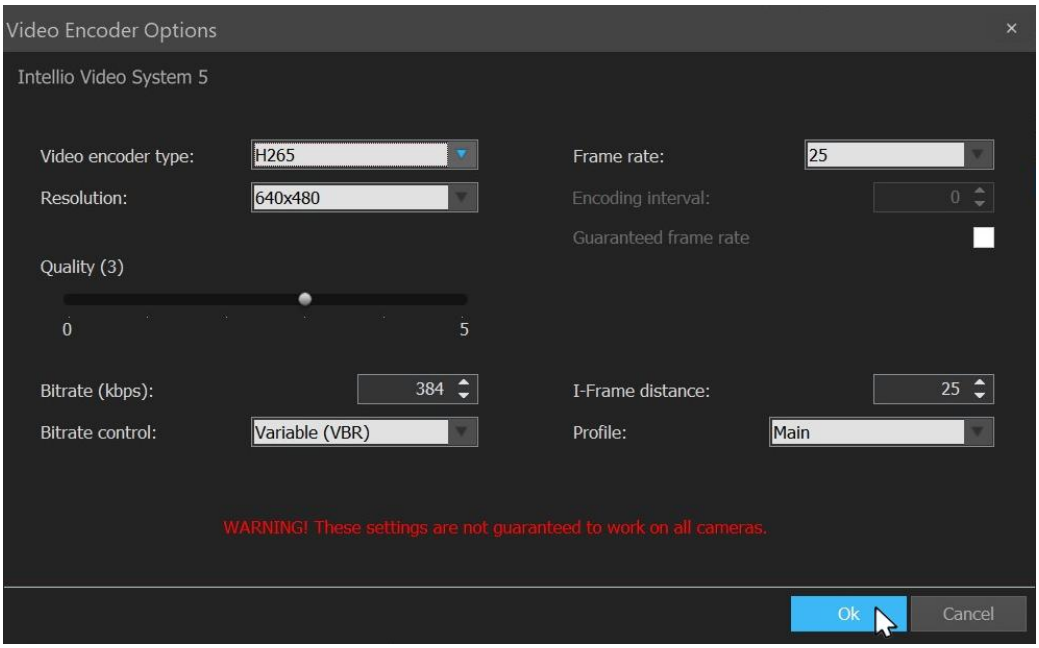


- **Media profile name**: A selectable and identifiable name on the **Profile Settings** tab.
- **Video source configuration**: The source of the video stream. It is clear-cut for cameras.
- **Video encoder configuration**: Selection of the video stream associated with the profile from the list.
- **Edit…**: Editing the properties of the selected video stream.
- **Audio source configuration:** Identifies the source of the audio stream.
- **Audio encoder configuration**: Selection of the audio encoder associated with the profile from the list.
- **Edit…**: Editing the properties of the selected audio stream.
- **PTZ configuration**: For PTZ cameras, specify the PTZ configuration here. In ONVIF cameras, PTZ control is tied to media profiles, so you need to assign the appropriate PTZ configuration to the ONVIF profile used for monitoring. Make sure to assign the PTZ configuration to the media profile used for monitoring.

Note: *If certain modifications cannot be made via ONVIF (some camera encoder settings may not be modifiable), you can perform them on the camera's web interface.*

8.2. Set up video compression

In this editing window, you can configure the compression properties of the video streams.



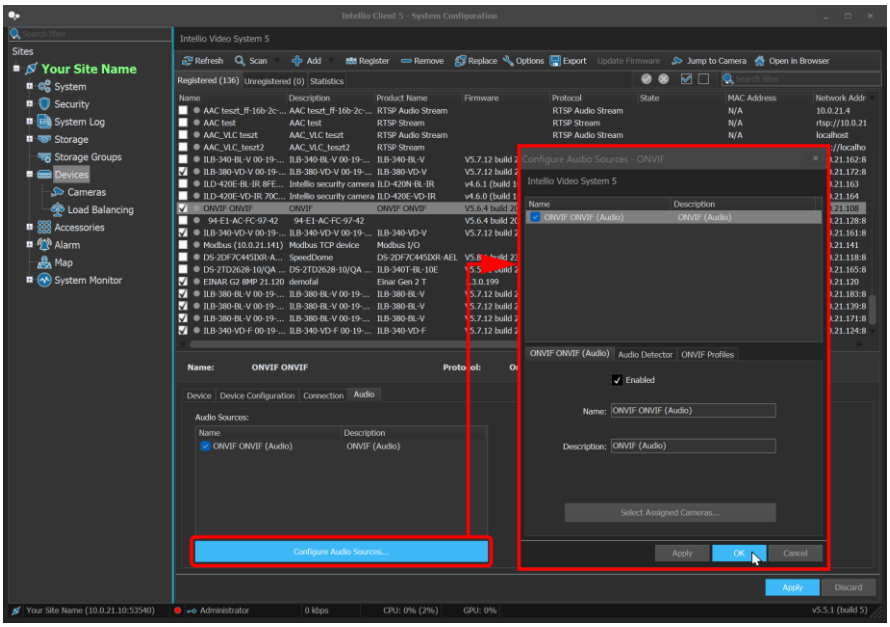
- **Resolution:** The resolution of the transmitted images.
- **Video encoder type:** The compression method (H.264, JPEG, MPEG4, etc.)
- **Quality:** The degree of lossy compression (the lower, the more significant the quality loss).
- **I-Frame distance:** The distance between keyframes. Reference frames have significantly larger size and processing requirements. The Intellio system allows a maximum keyframe distance of 100, but for optimal operation, values around 25, adjusted to the frame rate, are recommended.

- **Frame rate:** The number of frames captured per second.
- **Encoding interval:** Determines which frames are encoded and sent (1 - all, 2 - every second, etc.).
- **Bitrate (kbps):** The maximum allowed data size of the video stream. The camera compresses video data to the specified maximum or below.
- **Bitrate control:** The bitrate type can be set to constant or variable.
- **Profile:** Allows selecting profiles associated with the chosen video compressor.

Note: *It may happen that, for some reason, the configured settings are not applicable, so it is advisable to reopen the settings interface and check after approval. If the settings have not changed as desired, it is recommended to adjust the settings on the camera's own configuration interface (it is possible that the camera does not support the specified fps at the given resolution).*

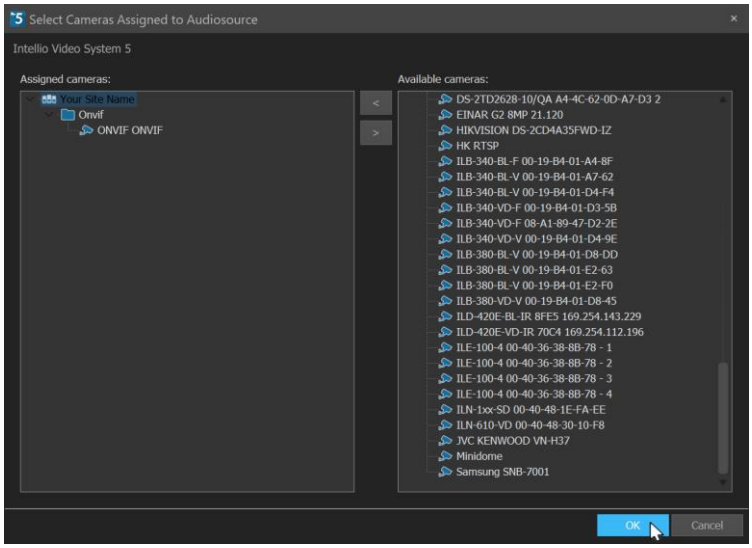
9. Set up audio inputs

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.

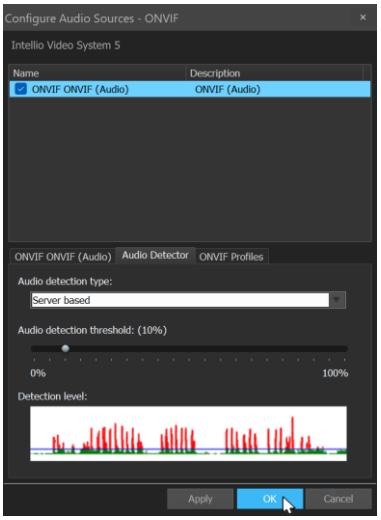


- **Enabled:** This checkbox is used to enable/disable the audio input. If an audio input is not in use, you can disable it here to prevent the system from processing it. In this case, it is advisable to disable the audio channel in the camera's web interface as well.
- **Name** and **Description:** 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.

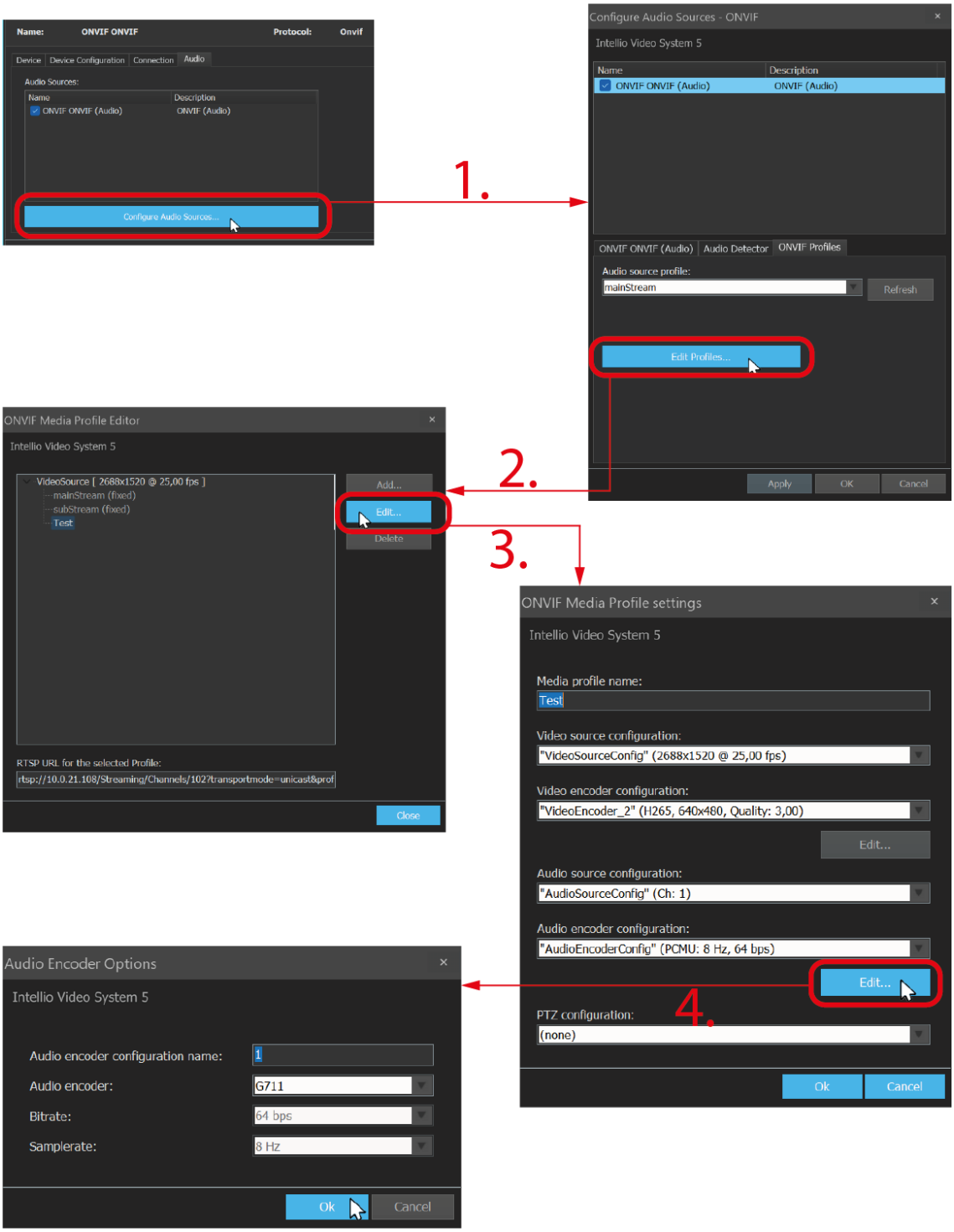


- **Audio Detector:** Specifies the type of audio detector used for storage.
  - **Disabled:** No audio recording takes place, but audio can still be monitored on the Live View interface.
  - **Continuous:** Continuous audio recording.
  - **Server based:** In this case, the detection threshold can be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



- **ONVIF Profiles** tab: Selects the ONVIF Media Profile to be used for the audio channel, with profile editing options. For audio/video devices, it is advisable to set the audio to the media profile used for storing camera images, as this eliminates the need to establish a separate RTSP channel for audio in this case.

- Pressing **Edit profiles** button opens the device's ONVIF media profile editing window. In the **Audio encoder options** window, you can configure the following:
    - **Audio encoder:** the encoding method (e.g. G711, G726, AAC).
    - **Bitrate (kbps):** Sets the maximum amount of data that can be sent per second.
    - **Samplerate:** Configures the sampling frequency.



10. Motion detection for storage

In the **System Configuration / Devices / Cameras** menu, select the desired camera, and click on the **Motion Detection** tab at the bottom to select the motion detection mode. The motion detection settings configured here will affect the **storage of video recordings**. Therefore, video footage will only be available for the selected camera if the motion detection mode set here was active at the specific moment.

By default, the **Server-side, for I-frame only (faster)** mode is automatically selected after registering the device. This means that motion detection will be immediately available for the entire screen, with general sensitivity and threshold settings. Be sure to check the settings and modify them if necessary so that recordings are only generated and occupy storage space when actual motion occurs.

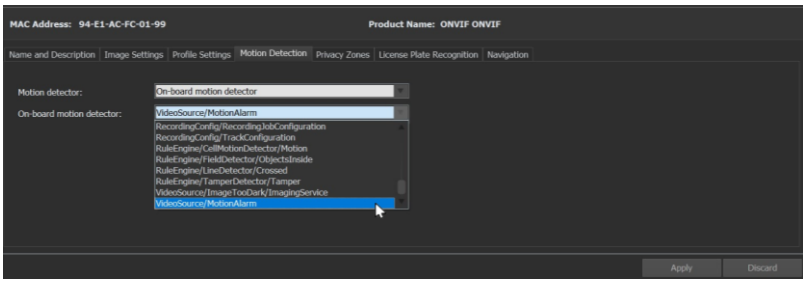
If the registered ONVIF camera supports it, always choose the **On-board motion detector** option, thus reducing the load on the server's processor.

On-board motion detector

Motion detection is performed in the camera, and the camera signals the server when motion occurs. For proper operation, enable and configure motion detection on the camera's web interface.

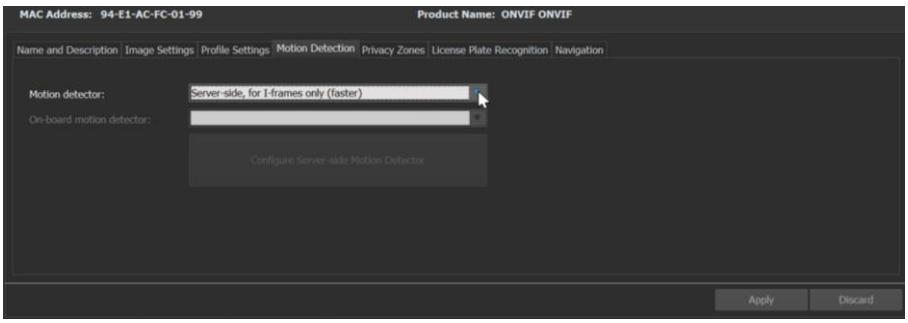
Select the notification type for motion detection in the **On-board motion detector** dropdown menu, which in most cases means the **VideoSource/MotionAlarm** type, then press the **Apply** button in the lower right corner.

Important: *To enable motion-based recording, it can provide appropriate information, but for features like Intelligent Motion Search or Intelligent Event Browsing, a separate detector must be added based on the motion detection set here.*



Server-side

Motion detection is performed by the server, which can impose an additional load on the server's processor. Therefore, configuring this option is recommended only if the previous option, **On-board motion detector**, is not functioning properly.

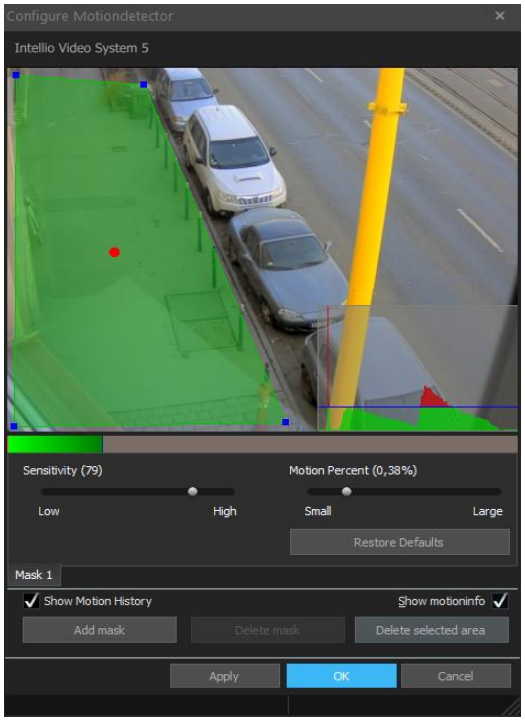


For server-side motion detection, the following options are available:

- **Server-side, for I-frame only (faster):** Motion detection only runs on keyframes, significantly reducing processing requirements.
- **Server-side (slower):** Motion detection examines each frame during the process, regardless of whether it is a keyframe or not. This method is the most CPU-intensive but provides the highest accuracy.

When any of the server-side motion detection options is selected, the **Configure Server-side Motion Detector** button becomes active. Pressing this button opens a settings window. By default, the motion detector considers the entire image area, but masks can be configured to make the motion detector sensitive to movements only within the designated areas. Multiple masks can be created, each with different detection parameters.

- The **Sensitivity** value determines how much luminance and shade differences the sensor takes into account. A low value might cause a person walking in a similarly shaded coat to blend into a similarly colored house wall without being noticed by the sensor. On the other hand, a high value prevents this, but it might trigger the motion detector for small changes in lighting conditions.
- The **Motion Percent** compares the number of moving pixels to the total number of masked pixels. Setting it low might interpret small moving objects or even slight changes in lighting conditions as motion, while setting it too high might filter out distant moving objects because they are too small.



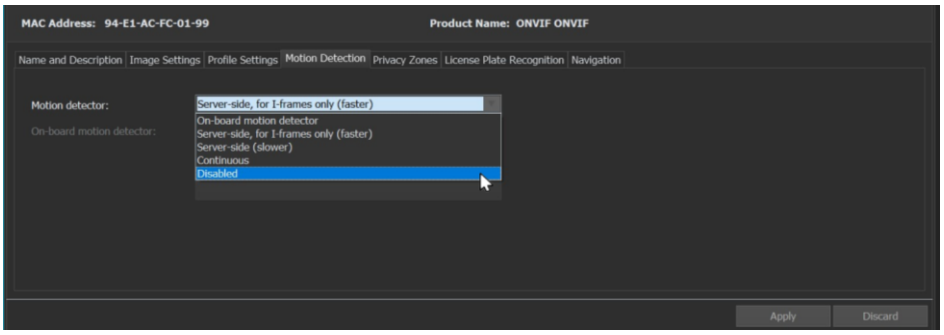
Create as many masks as you need. By creating multiple masks, you can create different sensitivity and size settings within the observed area, allowing you to tailor them to the specific characteristics of the monitored area.

Continuous

The system perceives constant motion on the camera, meaning that every frame is recorded as if there is continuous movement. This setting ensures that every frame is captured even if the camera is in motion-based recording mode in the **Storage Groups** menu.

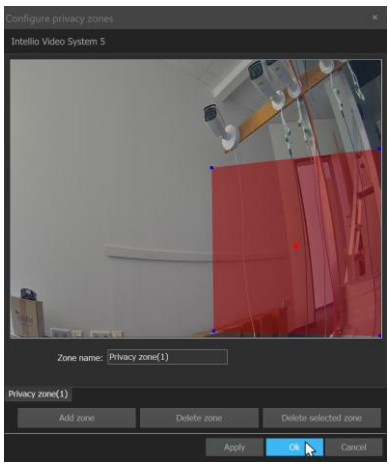
Disabled

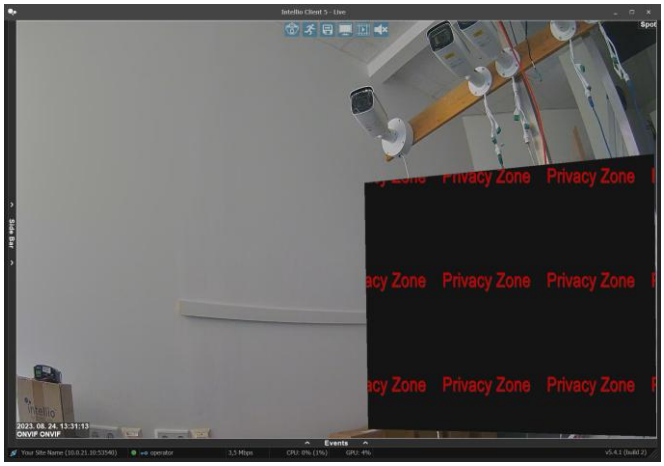
The system does not detect any motion on the camera, so in motion-based recording, the camera's image is not stored; it can only be viewed in the live view.



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.

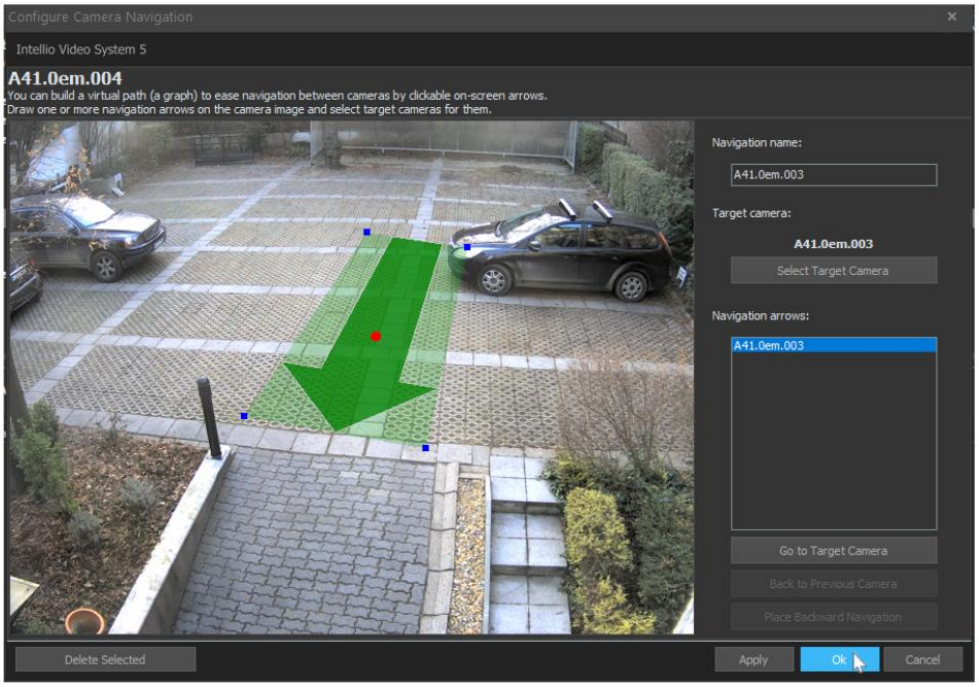
In the **Configure Camera Navigation** window, the live view of the selected camera is displayed, along with any arrows that may have been added. At the top, you can see the name of the currently edited camera, and on the right side, there are control elements used for modifying the settings.

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.

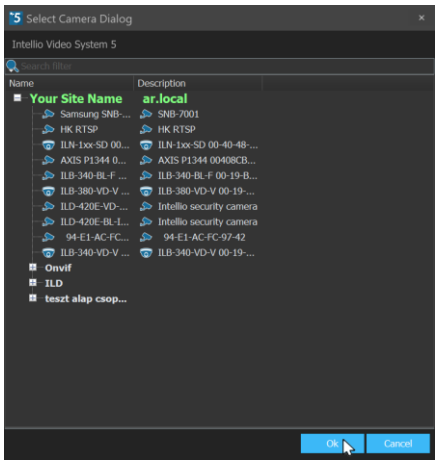


Navigation name

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

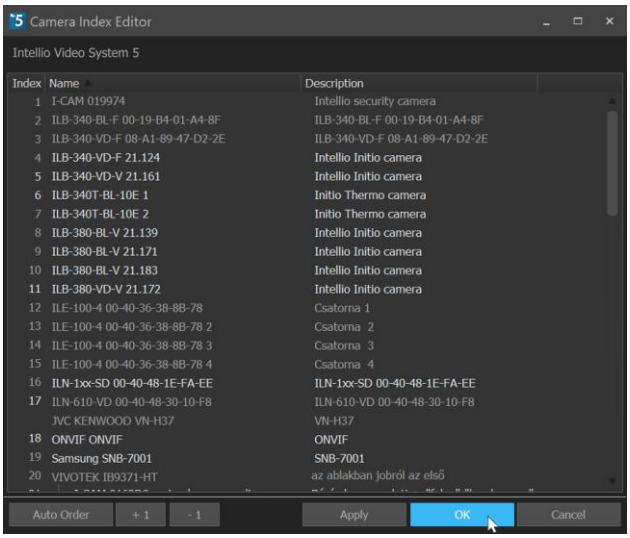
The cameras can be organized into groups based on certain characteristics, greatly facilitating their overview; for example, cameras located on different levels can be placed in separate groups. To create a group, press the **Create Group** button in the **System Configuration / Devices / Cameras** menu,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

To receive input signals, a **Device event detector** must be created:

- Navigate to **System Configuration / Alarm / Detectors** menu
- Click the **Add** button, select a **System**-type detector, choose **Device event detector**, select **Camera**, then click **Finish**
- In the **Detector** tab, select the appropriate ONVIF channel and define the remaining detector parameters according to the General structure of a detector section.

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.

16. Detectors

This chapter only focuses on detector settings for ONVIF devices. To gain a comprehensive understanding of the entire IVS alarm system, refer to the ***System detectors and the IVS alarm system*** documentation.

The initial step in setting up detectors is to define the detectors you want to apply on the **camera's web interface**. Then, you need to register the **signals** of the detectors in the IVS system using the Device event detector or ONVIF event detector. In addition to camera-side detectors, some server-side detectors can also be used with the camera, such as License Plate Detector and Video Motion Detector.

Based on the settings, when a detector triggers an event, the event is logged in the Event Log, the Client software can play an alert sound, display camera feeds, etc., according to the parameters set in the Detector configuration window shown in this section.

If additional actions are required (e.g., moving to a PTZ preset, sending an email), you must not only add the detector but also configure the **entire alarm system** by creating Partitions and Actions (see ***System detectors and the IVS alarm system*** documentation).

16.1. Add a detector

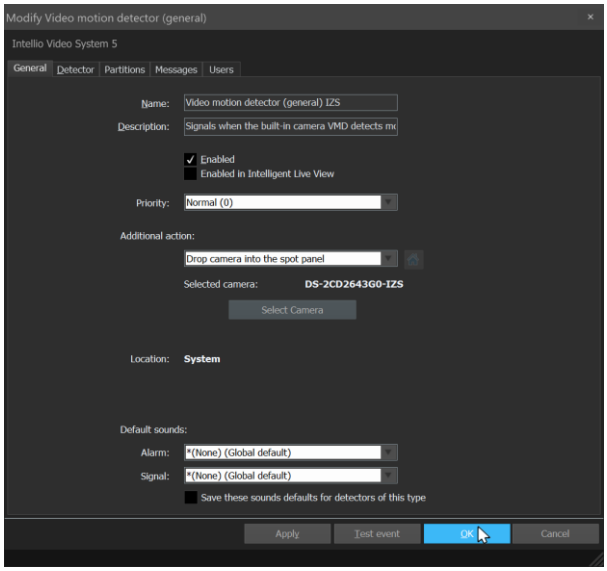
The settings for receiving signals from detectors defined in the camera are accessible through the client. The process for modifying and adding detectors is the same after selecting the appropriate detector-camera pair.

- Press the **Add** button in the **System Configuration / Alarm / Detectors** menu, then choose the **System** detector type.
- Select the desired detector from the list.
- Choose the camera on which you want to use the detector or from which you will expect signals (in the case of the Device event / ONVIF event detector).

16.2. General structure of a detector

Each detector includes configuration settings across the following five tabs.

16.2.1. General



The detector's **name** and **description** are general by default, so it's recommended to change them for easier identification later (including the associated camera in the name or description can be helpful). Below the name and description, you can **enable** the detector and specify whether the **Intelligent Live View** function should consider it.

Priority controls how events from the detector appear in Spot panels in Live View; higher-priority events will override lower-priority ones.

Additional action allow you to display even a different camera's feed instead of the default one when an event is triggered. This is useful if a sensor is connected to a camera's I/O input, but monitors a different camera's field of view. You can also configure complete view changes, displaying multiple cameras simultaneously when the detector triggers an event.

You can assign a custom sound to the detector's events.

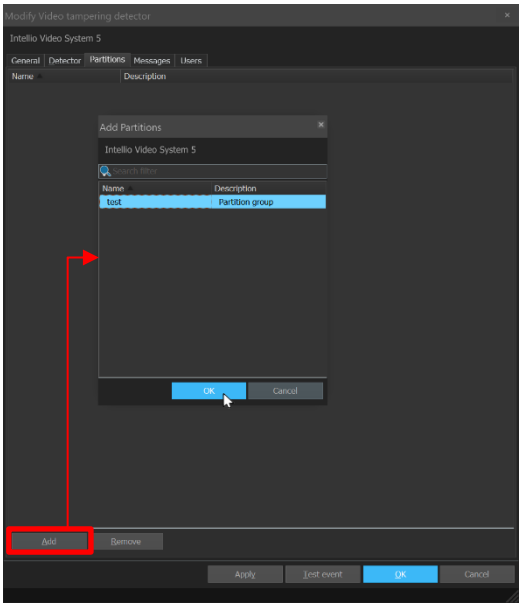
If it is not necessary for each event to have a separate sound, you can simply set the **Default Sounds** for the detector. These will be the default sounds for detector events: **Alarm** for alarm events, and **Signal** for signal events.

If you want these default sounds to apply to all detectors of this type, check the **Save these sounds defaults for detectors of this type** checkbox. You can also provide your own custom sound file by selecting **Add...** from the dropdown menu at the bottom. The selected sound file will be uploaded by the client to the SITE servers, from where other clients will download it upon their first login (see the **Media Library** section in the ***System detectors and the IVS alarm system***).

If you want each event to have a different sound, you can set the sounds for each event on the **Messages** tab.

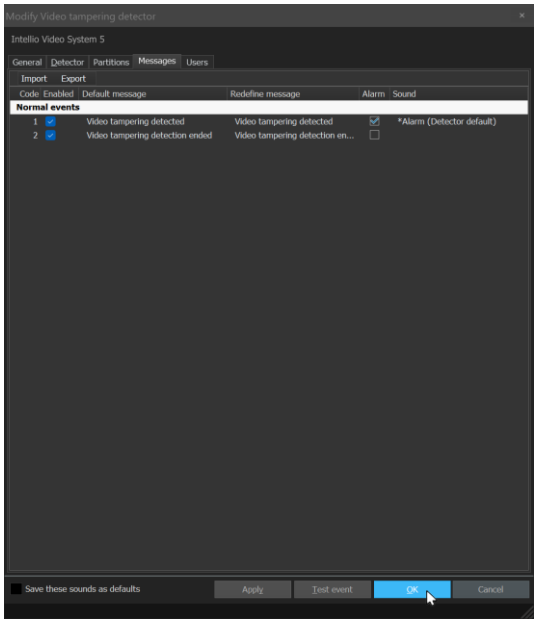
16.2.2. Partitions

The list of partitions to be activated by the detector alarm can be specified here. The partitions only respond to normal events, ignoring technical events.



***Important**: if all the partitions associated with a detector are inactive, the detector will not transmit events and alarms! If the detector must always be active, it is recommended to add an always-active partition without any actions to the list of partitions associated with the detector.*

16.2.3. Messages



It is possible to set which events of a given detector are allowed and whether they appear as alarms or simple signals.

If an event type is checked in the **Alarm** column, an alarm will be triggered when the corresponding event occurs (e.g., the alarm will appear with a red background in the Events panel at the bottom of the Live View).

If only the left-side Enabled box is checked, then only a **signal** will occur (e.g., the signal will appear in yellow in the Events panel).

You can override the default sounds with custom event sounds. In the **Sound** column, you can open the dropdown menu and select any sound that will play when the event occurs. You can also select your own sound file by clicking the **Add** option at the bottom of the list.

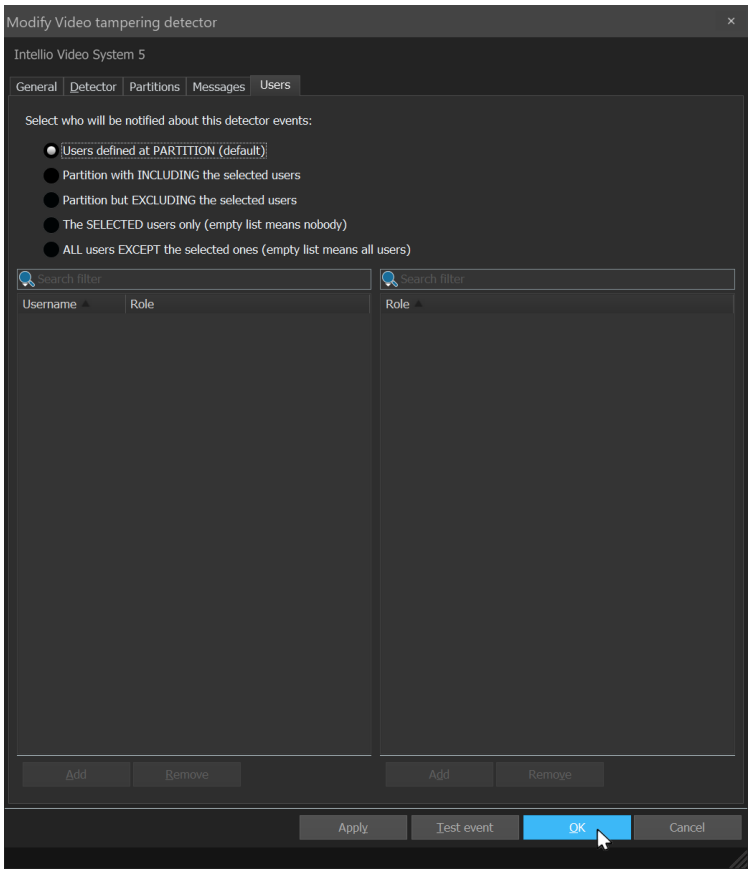
These settings can also be saved to the detector type by checking the **Save these sound as defaults** checkbox at the bottom.

The settings in the Messages tab can be exported and imported, allowing the same message settings to be imported into multiple cameras with the same type of detector.

16.2.4. Users

On this tab, you can specify which users or roles should receive notifications about detector events:

- **Users defined at PARTITION (default):** In this case, only the users and roles specified for the partitions assigned to the detector will receive detector events.
- **Partition with INCLUDING the selected users:** Users and roles specified for the partitions assigned to the detector will receive events, supplemented by those listed here.
- **Partition but EXCLUDING the selected users:** Only the users and roles specified for the partitions assigned to the detector will receive events; those listed here will be excluded.
- **The SELECTED users only (empty list means nobody):** In this case, users and roles specified for the partitions assigned to the detector will not be considered; only those listed here will receive notifications. An empty list means nobody will be notified.
- **ALL users EXCEPT the selected ones (empty list means all users):** In this scenario, everyone will receive events except those listed here. An empty list means everyone will receive notifications.



16.2.5. Detector

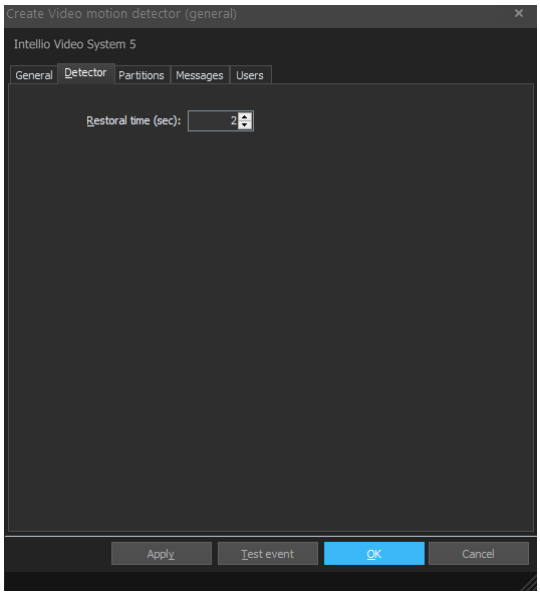
The unique settings specific to the detector can be configured in this tab. Some detectors do not have this tab because they do not require any special configuration.

The following sections provide descriptions of the most commonly used detectors for ONVIF cameras.

16.3. Video motion detector (general)

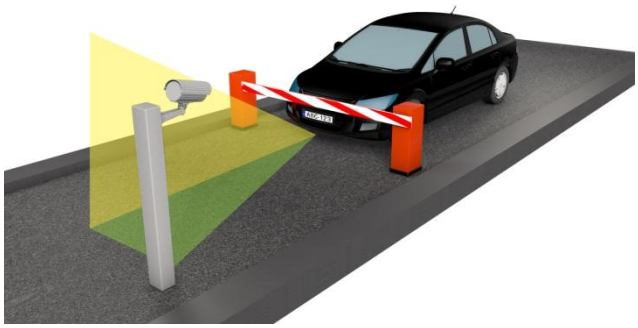
It essentially converts the camera's built-in motion detection signals into events. These generated events can then be used within the alarm system to trigger various actions.

- **Restoral time:** The duration the detector waits before sending the restore signal. If the monitored area has significant movement, it is recommended to set a higher value. Conversely, if motion detection is infrequent, a lower value can be used. This helps prevent excessive repeated alerts.



16.4. Automatic number plate recognition (ANPR/ALPR)

License plate recognition is performed on the server side. For configuration, be sure to read the ***License Plate Recognition*** documentation.

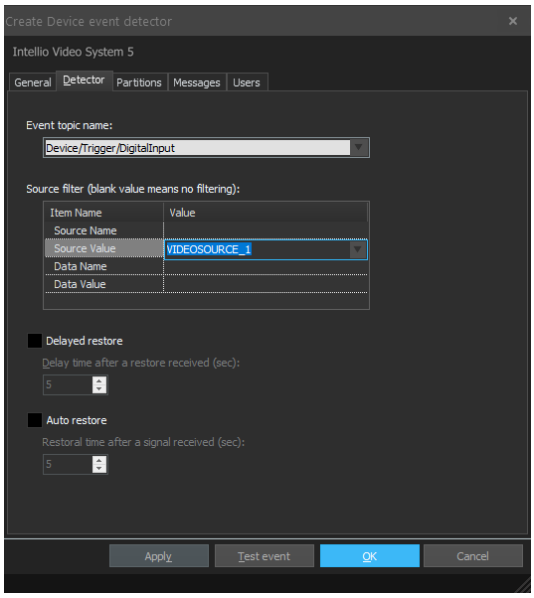


The detector tab is completely absent from the configuration window; the settings for recognition properties must be done at the camera associated with the detector, under the **System Configuration / Devices / Cameras** menu, in the **License Plate Recognition** tab.

16.5. Device event detector

An event is triggered when a predefined alarm event occurs on the camera monitored by the detector.

To enable the detector, first configure the desired camera-side detector on the camera's web interface, then set the following parameters in the IVS:



- **Event topic name:** Select the detector signal channel set in the camera, through which the camera sends the signal for the specific detector. For example, if you want to receive the signal from the camera's contact input, you typically need to select the signal type named **Device/Trigger/DigitalInput**.
- **Source filter:** Allows server-side filtering based on the event source and data. The detector will only signal events that match the configured values. Fields left blank will not be filtered. If you cannot determine the filtering parameters of this detector with the required accuracy, then use the ONVIF event detector instead.
- **Delayed restore:** The time it takes for the detector to return to its idle state after the event ends.
- **Auto restore:** The time elapsed since the start of the alarm event after which the detector returns to its idle state. Since it's possible that the detector remains in the active state continuously during this period without additional alarms (e.g., continuous movement in front of the camera), it is advisable to set a high value.

16.6. ONVIF event detector

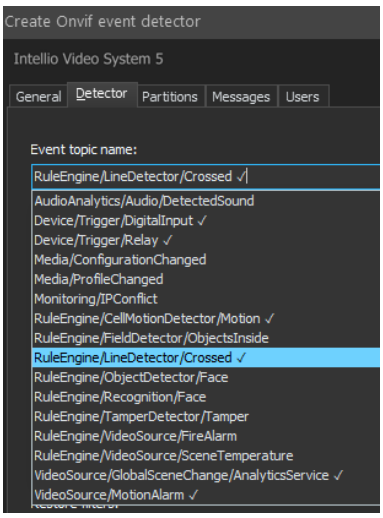
The ONVIF event detector triggers an event in the IVS based on a signal received from a camera registered through the ONVIF protocol. For proper operation, you must accurately configure the correct filtering conditions so that the IVS generates an event only for the signal defined by the specific ONVIF Source, Key, and Data key-value pairs.

To use this detector, first configure the desired camera-side detector on the camera's web interface. After that, in the IVS, set the following parameters in the order shown below.

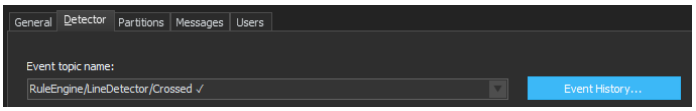
In the **Event topic name** drop-down menu, select which camera signal you want to monitor.

For guidance, a check mark is shown after those topic types for which the camera has already sent at least one signal since it was registered in the system.

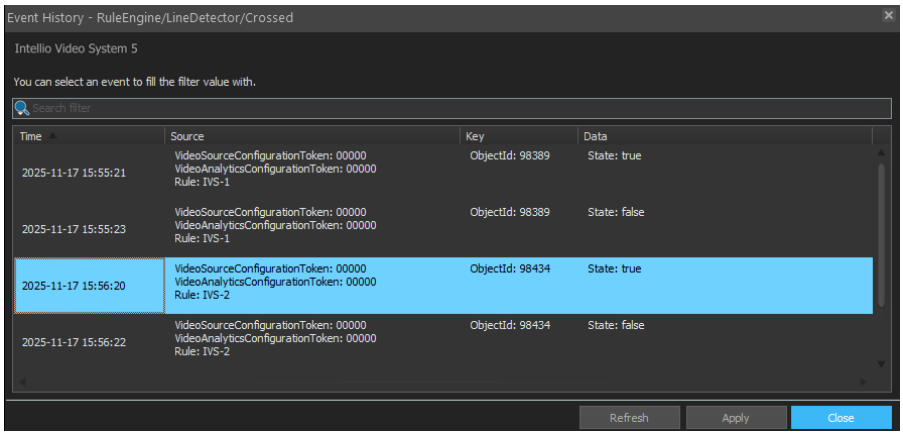
For example, if you previously created line-crossing detector(s) on the camera and they have already sent signals, then a check mark will appear at the end of the row (RuleEngine/LineDetector/Crossed).



After selecting the desired signal type, press the **Event History** button. This helps you determine the correct filtering conditions by showing which Source, Key, and Data elements appeared in the last few signals.

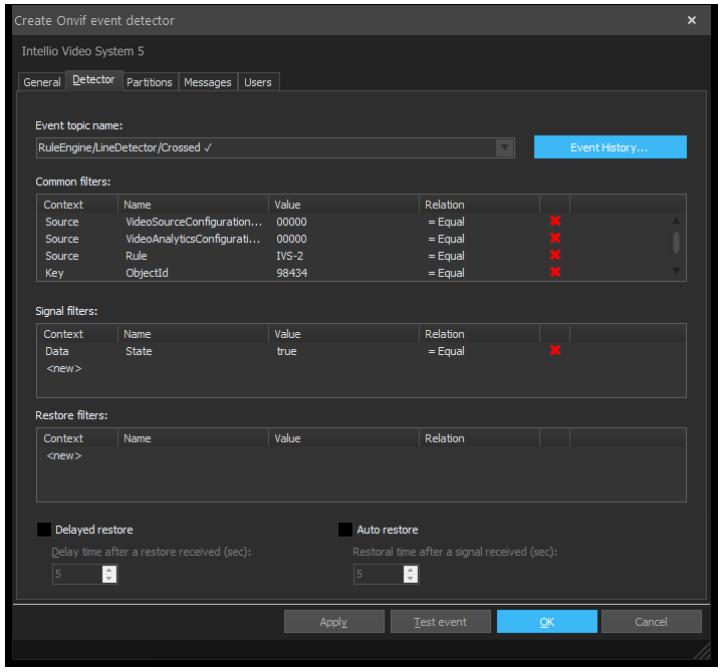


Ideally, the camera sends all necessary information through the ONVIF protocol. For example, it does not only report that a line-crossing happened, but also which specific line - defined in the camera - was crossed. In the example below, the rule named IVS-2 in the camera generated the signal, which in this case means that Line 2 was crossed.



Unfortunately, not all cameras provide such detailed data. Because of this, it is possible that - due to the limited implementation of the camera's own ONVIF protocol - the desired filtering cannot be configured.

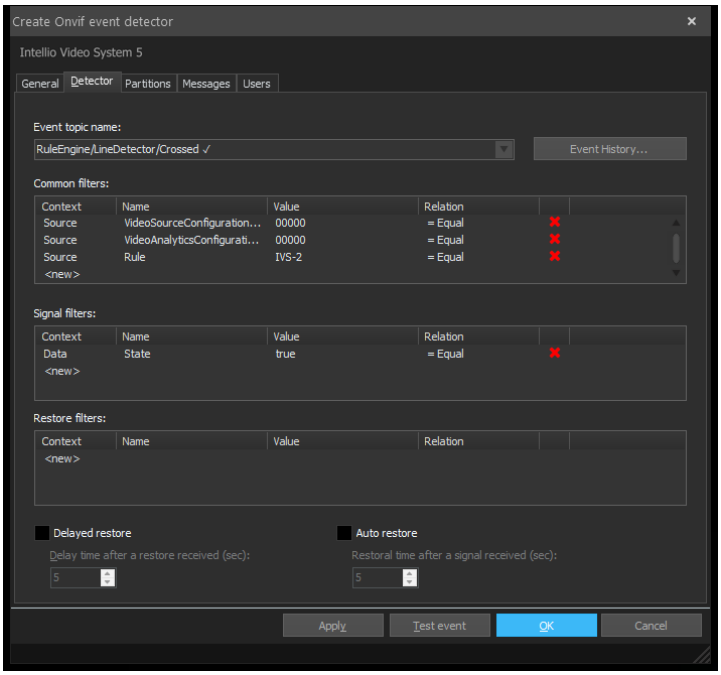
Select the desired signal, then click the **Apply** button. The software will fill in the filtering parameters after you enable overwriting in the window that appears.



Check the automatically filled filtering conditions and optimize them. In the example, you must delete the values that change over time - specifically the ObjectID parameter - because it was valid only for that past event. The camera will send new events with different IDs.

You can delete an entry by clicking the red X icon at the end of the row.

The detector rule named IVS-2 recorded in the camera (the line-crossing detector for Line 2) will be correctly received by the IVS when using the filtering conditions shown in the example.



Of course, you can create completely custom filtering conditions - any value in the filtering fields can be modified, deleted, or new ones can be added.

However, as a starting point, always use the information displayed through the Event History button.

The **Common filters** field must always be filled in, while at least one of the **Signal filters** or **Restore filters** fields must also be completed. If both are filled, the detector will ignore signals outside of those filters; if only one is filled, the empty field is treated as the negation of the other.

For example, in the case above, you don't need to add the pair required for State:True to the Restore filters field. However, if the camera sends State:True for the alarm, but State:000 for the

restore, that value must be specified in the Restore filters field. Or, if no restore is sent at all, the following parameters can be used for restore.

Delayed Restore: The detector returns to the idle state after this amount of time following the end of the event.

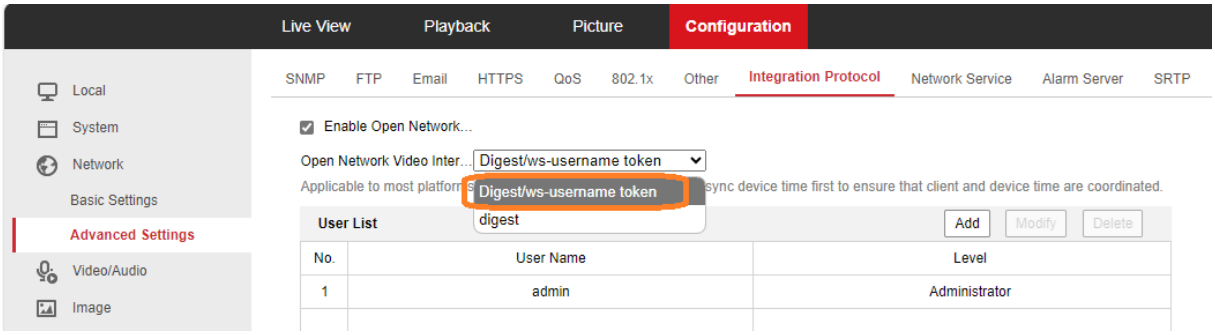
Auto Restore: The detector returns to idle after the specified time has elapsed since the alarm event started. Since the detector might remain continuously active during this period without triggering a new alarm (e.g., continuous movement in front of the camera), it is recommended to set a high value.

17. Questions - Answers

17.1. Register Hikvision devices

A Hikvision camera can be registered in the system using the Hikvision protocol (see ***Hikvision devices*** documentation). Alternatively, when registered via the ONVIF protocol, the video channel associated with the device may not appear in **System Configuration / Devices / Cameras** after registration.

In this case, switch the ONVIF connection mode on the camera's web interface as shown in the image below, then completely delete the registered device from the IVS and re-add it.



18. Further steps

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