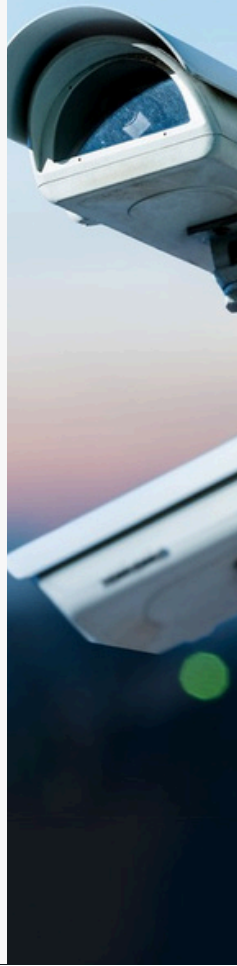
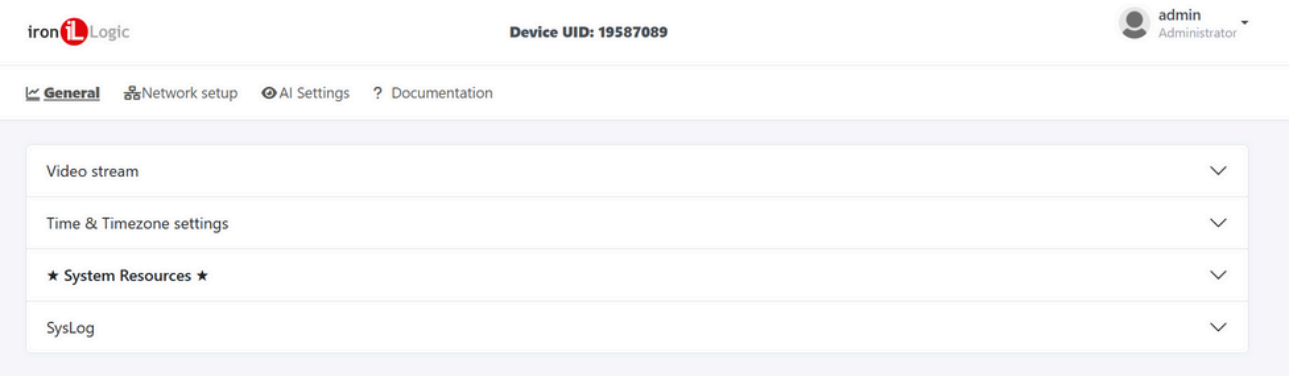
IL SMART CAM

Technical documentation

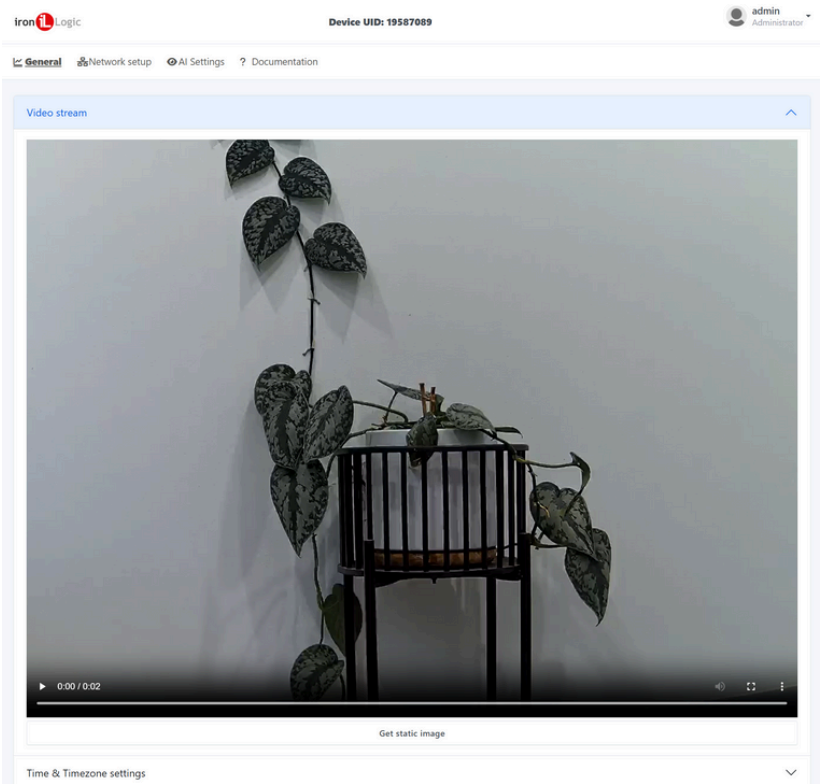


1. General Dashboard



The Dashboard for the IronLogic Smart Camera contains both basic and advanced features to manage the camera feed, telemetry and settings. The General tab contains expandable menus for viewing the **live camera feed**, setting the **time & time zone settings**, viewing the **system telemetry** and viewing the **system log**. This section will outline the use of each item within the general tab of the Cloud UI.

1.1 Live Video stream

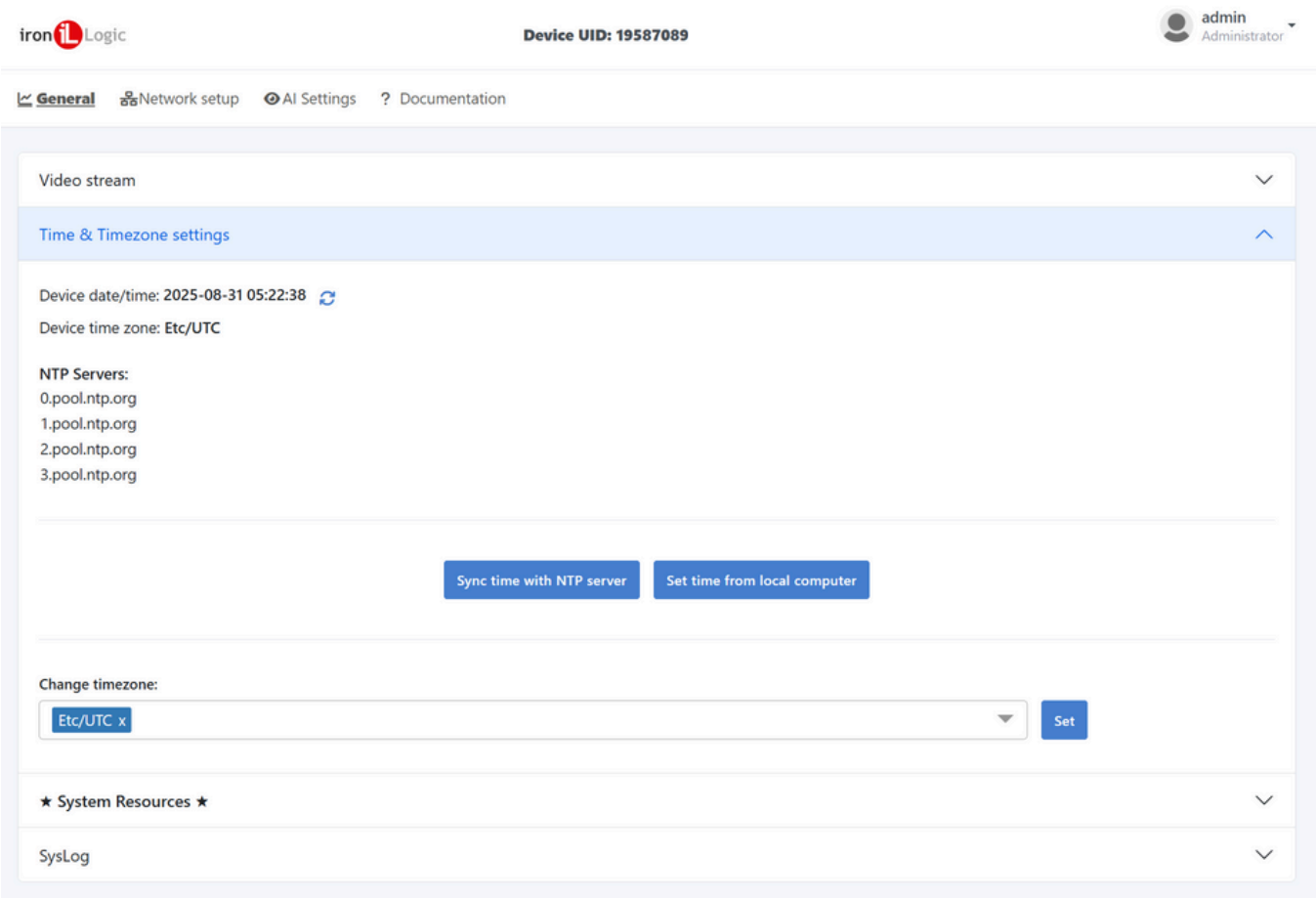


The Video stream drop-down menu displays the live feed incoming from the camera, which is updated in real time and can act as a monitoring panel for the administrator.

The live stream can be paused to enable playback capabilities, allowing the administrator to rewind through the feed for the time that the video stream was open.

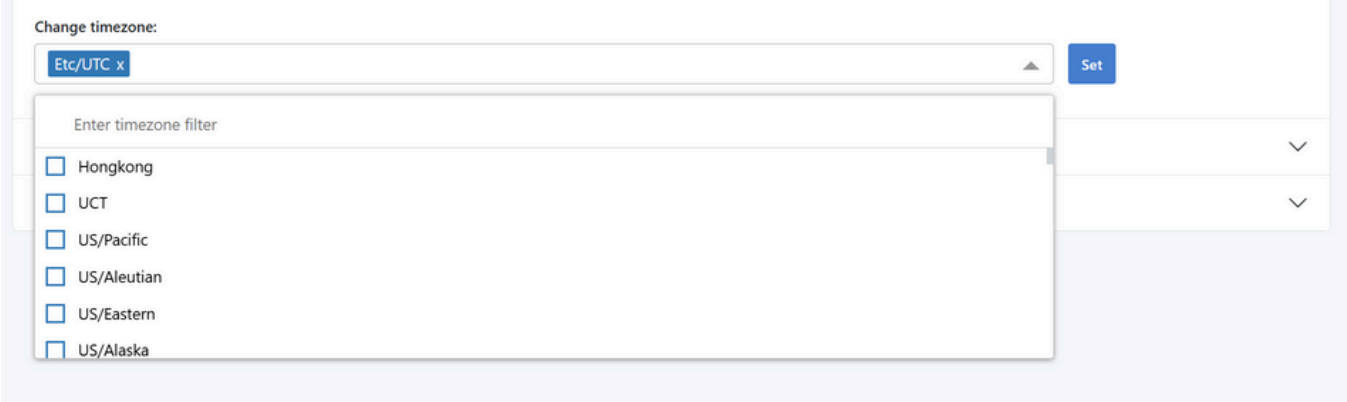
The **Get Static Image** button will take a still snapshot of the live video feed

1.2 Time & Time zone settings

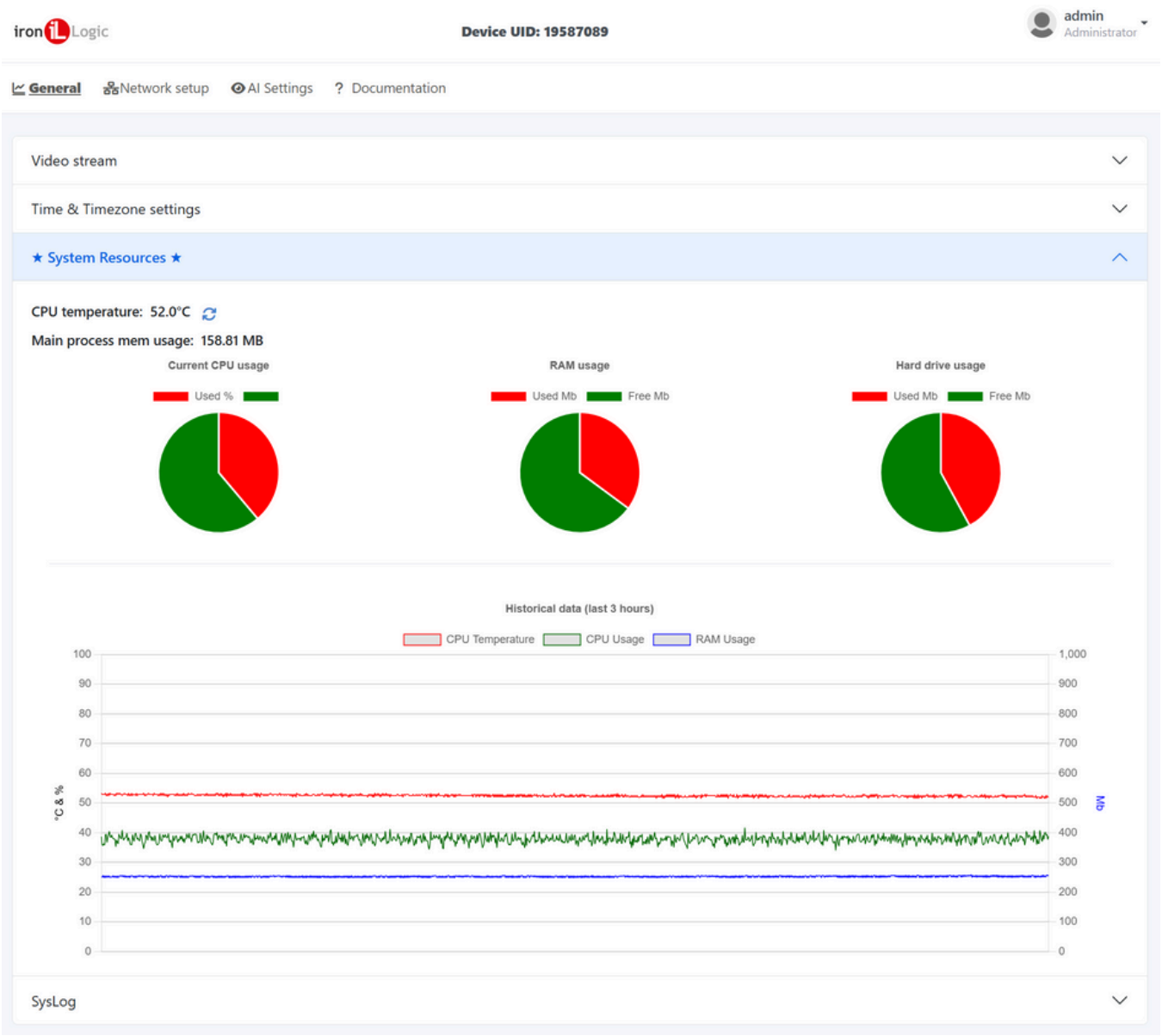


The Time & Timezone settings tab allows users to set their local time and time zone. The device date and time can be refreshed to check synchronisation. In the case of desynchronization, the **Sync time with NTP server** or **Set time from local computer** options will recalibrate the time to the respective definition, correcting any desynchronization issues.

Time zones can also be set manually from the drop-down menu under the **Change timezone** section. This menu reveals all major time zones, which can be imported by clicking the checkbox next to the desired selection.



1.3 System Resources

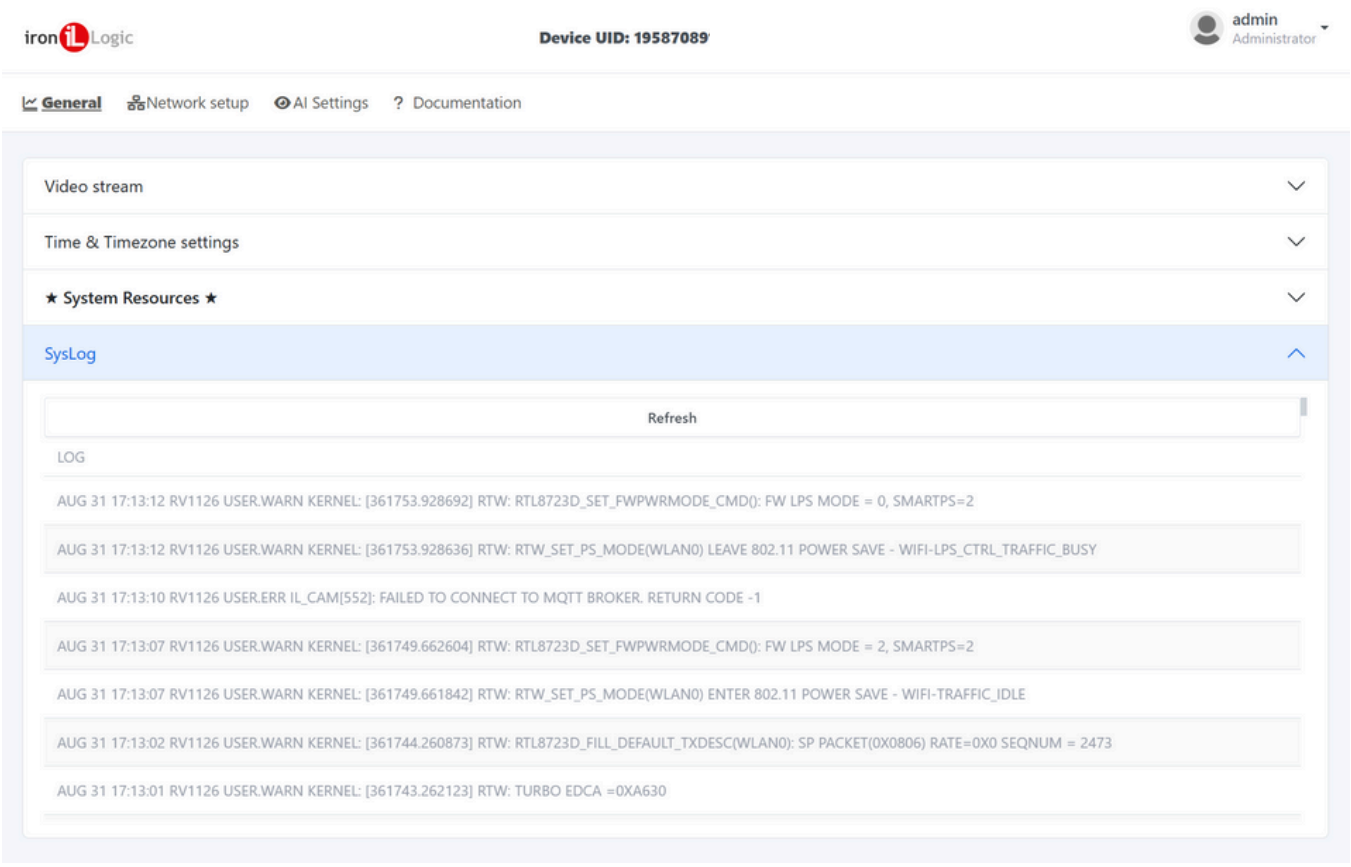


The **System Resources** section provides a real-time telemetric overview of the Smart Camera's hardware performance.

Three pie charts visually summarise the current **CPU usage**, **RAM usage**, and **hard drive usage**. Each chart distinguishes between used and available capacity, allowing for the quick identification of potential performance bottlenecks.

Below, the Historical Data graph tracks key parameters over the last three hours, including **CPU temperature**, CPU usage, and RAM usage.

1.4 System Log



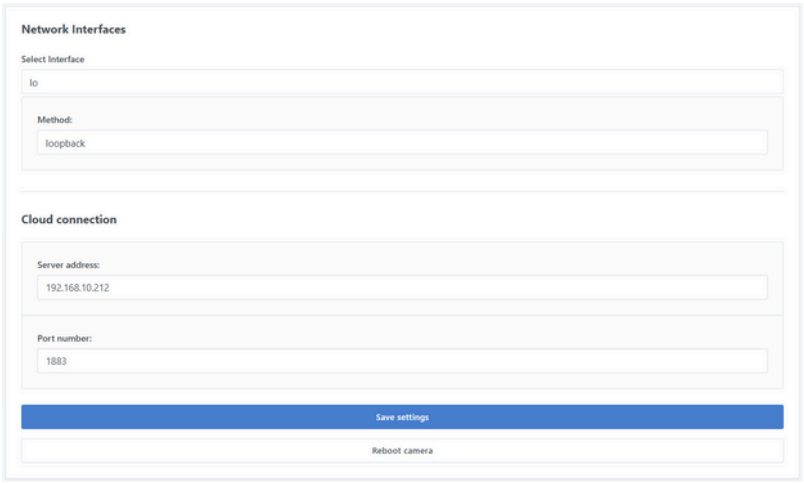
Displays a chronological record of system events for monitoring and troubleshooting.

- Each entry includes the date, time, source, severity level, and event message.
- Events may include network activity, hardware status, kernel messages, and system warnings.
- The log is presented in a scrollable menu for easy navigation.
- A refresh button updates the log to display the most recent events.

2. Network setup

2.1 Network Interfaces

2.1.1 lo



lo Interface - loopback interface

- **Method (loopback) -** Defines the connection method as loopback. All traffic is routed back to the device itself without external network communication.

2.1.2 eth0

eth0 Interface - Specifies the network interface to be used for external communication over Ethernet.

- **Method (loopback) -** Defines the connection method as static, assigning a fixed IP configuration instead of using DHCP.
- **Static IP Address -** Specifies the device's fixed IP address on the selected network interface.
- **Mask -** Defines the subnet mask for the network, determining which IP addresses are local to the subnet.
- **Gateway -** Specifies the network gateway used for routing traffic to external networks.

2.1.3 wlan0

wlan0 Interface - Specifies the network interface to be used for wireless communication over Wi-Fi.

- **Method:**
  - **Static -** Defines the connection method as static, assigning a fixed IP configuration instead of using DHCP.
  - **DHCP -** Defines the connection method as DHCP, automatically assigning the device's IP address, subnet mask, and gateway from the network's DHCP server.

WiFi Connection

- **SSID -** Defines the Wi-Fi network name to connect to.
- **key type -** Specifies the authentication method used by the network.
- **Password -** Secures the connection with the network password.

Search wifi Networks - Displays a list of nearby Wi-Fi networks. Select your prefered network by clicking onto the desired label in the SSID column.

2.2 Cloud Connection

- **Server Address -** Defines the target server (IP or hostname) that the camera will connect to.
- **Port number -** Specifies the communication port used to connect with the server.

3. AI Settings

3.1 AI Function

- **LPR -** License plate recognition for vehicle identification.
- **Object Detection/Counting -** Detects and counts objects within the camera's field of view or moving through a designated area specified within the settings.

3.2 Settings

3.2.1 LPR

3.2.1.1 Detection Settings

Configures parameters for license plate recognition and event detection.

- **NMS Threshold -** Specifies the non-maximum suppression threshold used to eliminate overlapping detections.
  - ***Impact* -** Higher values reduce duplicate detections but may miss nearby plates; lower values may produce multiple detections for the same plate.
- **Min Detection Box Confidence -** Defines the minimum confidence level required for a detection to be considered valid.
  - ***Impact* -** Increasing this value reduces false positives but may miss faint or partially obscured plates.
- **Group Detections in One Event in Time (seconds) -** Specifies the time window in which multiple detections are grouped into a single event.
  - ***Impact* -** Larger windows consolidate repeated detections of the same vehicle; smaller windows may generate multiple events for a single pass.

Save Detection Settings - Applies and saves the current detection parameters to the device configuration.

3.2.1.2 OCR (Optical Character Recognition) Settings

Configures parameters for optical character recognition within detected objects.

- **NMS Threshold -** Specifies the non-maximum suppression threshold used to eliminate overlapping OCR detections.
  - ***Impact* -** Higher values reduce duplicate detections of the same text but may miss closely spaced characters; lower values may generate multiple detections for the same text region.
- **Min Detection Box Confidence -** Defines the minimum confidence level required for an OCR detection to be considered valid.
  - ***Impact* -** Increasing this value reduces false positives but may miss faint or partially obscured text.
- **Linked OCR Class -** Specifies the object class to which OCR processing is applied.

Save OCR Settings - Applies and saves the current OCR parameters to the device configuration.

3.2.1.2 Video Tracking Settings Settings

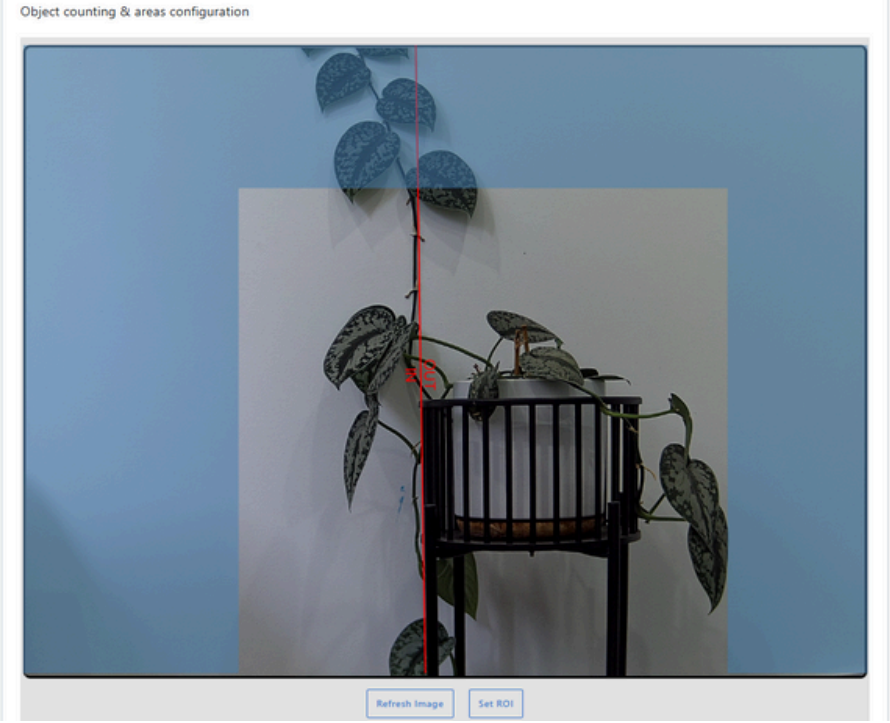
Configures parameters for object tracking within the camera's field of view.

- **Track Buffer Size -** Specifies the number of frames used to maintain object tracking history.
  - ***Impact* -** Larger values improve tracking stability for temporarily occluded objects but increase memory usage and latency. 30 FPS Cap.
- **High Threshold -** Defines the confidence threshold above which detections are considered strong matches for tracking.
  - ***Impact* -** Higher values reduce false tracking but may miss weak detections; lower values may track more objects but increase false positives.
- **Match Threshold -** Specifies the similarity threshold required to associate a new detection with an existing tracked object.
  - ***Impact* -** Higher values reduce incorrect matches but may break tracks for fast-moving or partially obscured objects.

Save Video Tracking Settings - Applies and saves the current tracking parameters to the device configuration.

3.2.2 Object detection/counting

3.2.2.1 Object counting & areas configuration

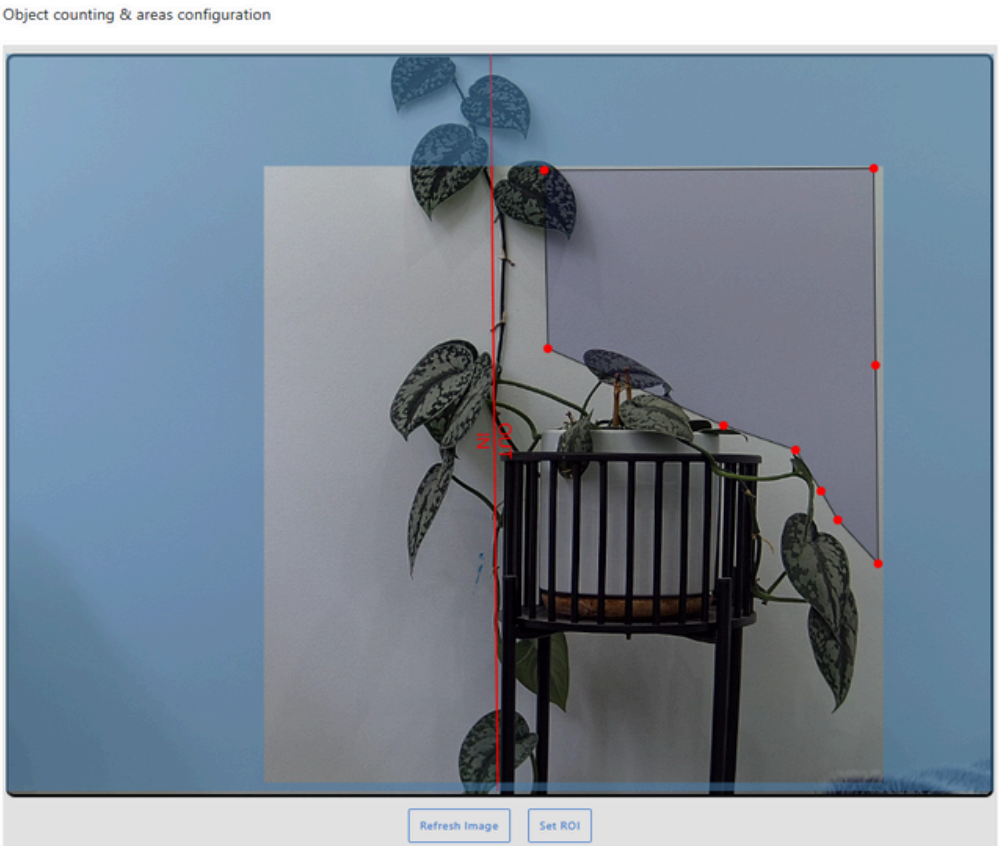


Defines the region of interest (ROI) used for object detection and counting.

Region of Interest (ROI) - Displays a static image from the camera with excluded areas shaded in transparent blue. To set the inclusion zone, click the "**Set ROI**" Button and click on two points on the static image. The system will then automatically create a square ROI.

Refresh Image - Updates the background image to reflect the current camera view.
Set ROI - Allows configuration of the active detection area by selecting or adjusting the ROI.

- **Enable Object Counting (checkbox) -** Activates object counting functionality for the configured ROI and cross-line or exclusion zone.
- **Inverse IN/OUT (checkbox) -** Reverses the direction logic of the cross line, swapping which side counts as "IN" and which counts as "OUT."
- **Draw New Cross Line (button) -** Enables the user to create a cross line on the static image by clicking two points. The system automatically generates a line between these points.
    - **Impact -** Each event is triggered when an object crosses the defined line, serving as the basis for counting entries and exits.



No access area configuration. Defines restricted areas and time schedules where object detection is not permitted.

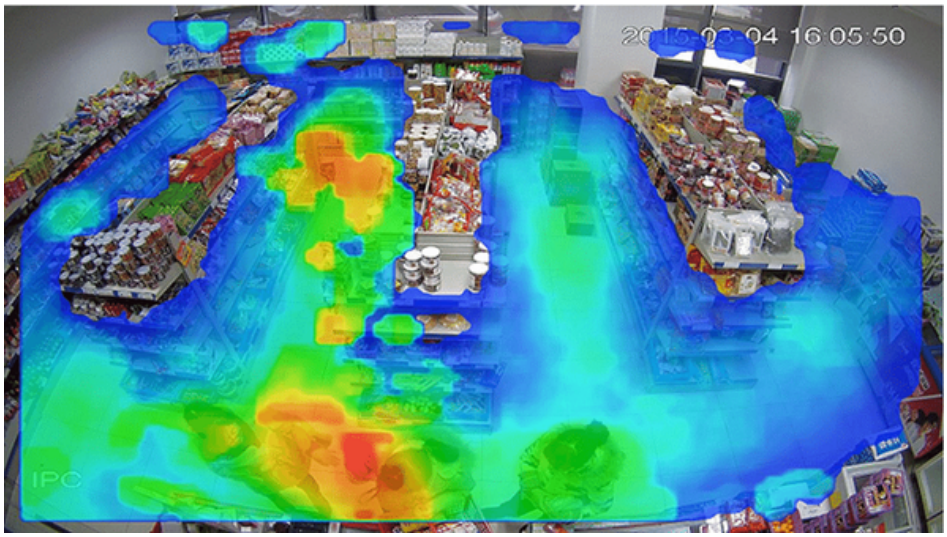
Add New - Creates a new configuration entry for a no-access area by adding a row to the table.

- **Configuration Table -** Displays all defined no-access areas with the following parameters:
  - **# -** Index number of the configuration.
  - **Name -** User-defined label for the restricted area.
  - **Select -** Enables or disables the configuration.
  - **Week Day -** Specifies the day of the week the restriction applies.
  - **Time From / Time To -** Defines the active time window for the restriction.

Save Settings - Applies and stores the configured no-access area parameters.

Configuring the "No access area" polygon - The user can define the no access area by clicking points on the static image to form an enclosed polygon. Points can be added or removed by clicking existing points. When an object enters the defined polygon, the system generates an event indicating entry into a restricted area.

3.2.3 Heatmap Analysis

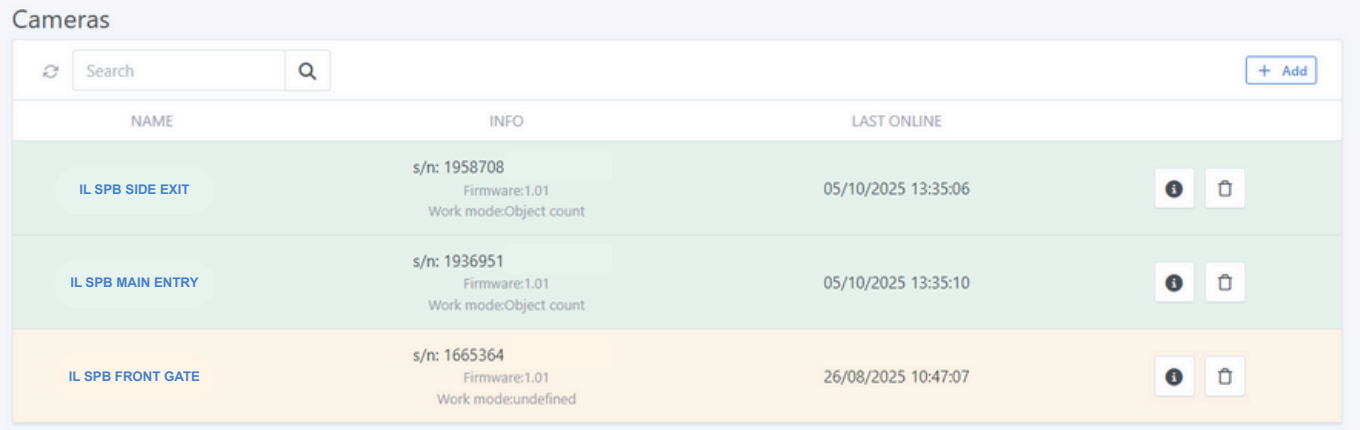


Generates a color-coded visualization of motion density within the camera's field of view by tracking object activity over time. The feature highlights areas of high and low movement, supporting operational analysis, safety planning, and behavioral insights.

Static Background Image – Displays a still frame from the live feed for selecting the analysis area.
Refresh Image – Updates the static image to match the current camera view.
Export Heatmap – Saves the generated heatmap as an image file for reporting or comparison.

- **Set Region of Interest (ROI)** – Defines the polygonal area where motion data is collected. Activity outside this area is excluded from analysis.
- **Sampling Interval (seconds)** – Sets how frequently motion data points are recorded. Shorter intervals provide higher resolution but increase processing load.
- **Aggregation Period (hours/days)** – Determines the time span over which data is accumulated to generate the heatmap.
- **Color Scale** – Selects the color gradient used to display activity intensity (e.g., blue–red or green–yellow–red).
- **Opacity Level (slider)** – Adjusts the transparency of the overlay for optimal visibility.
- **Normalisation (checkbox)** – Dynamically scales the color range relative to the most active zone for consistent contrast.
- **Enable Heatmap** – Activates real-time tracking and visualization.
    - ***Impact*** – Once enabled, the system aggregates motion data within the ROI, rendering a heatmap where warmer colors represent frequent activity and cooler tones indicate low movement.

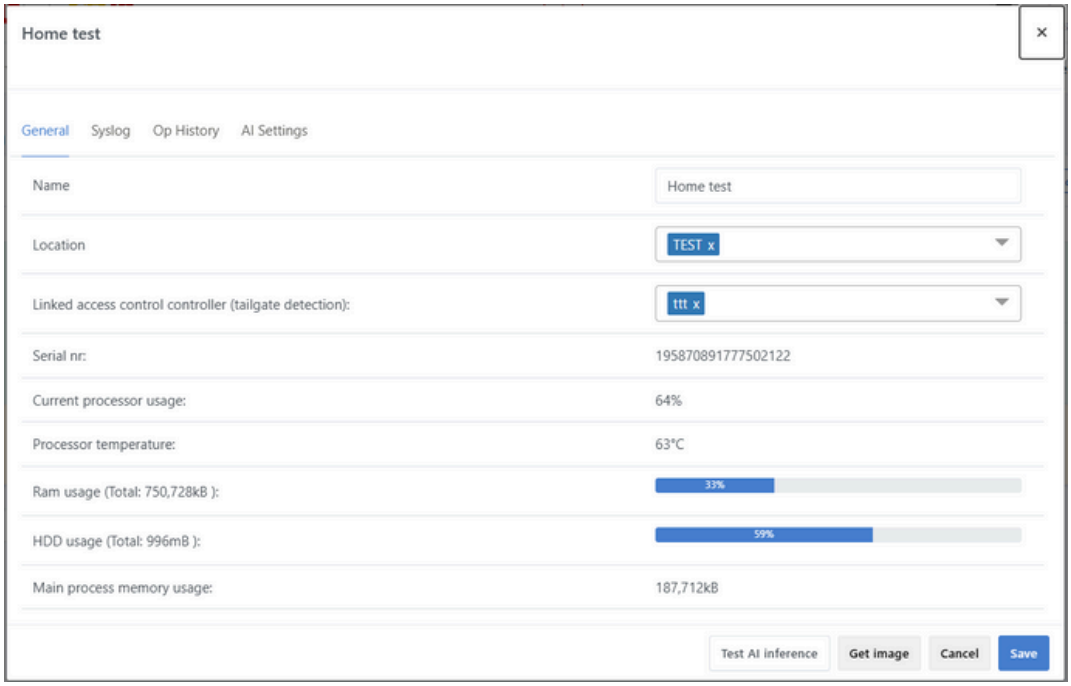
4. Cloud UI Management



Provides centralised management and monitoring of all connected cameras through the cloud interface.

- **+ Add (button) -** Opens a prompt to register a new camera by entering its serial number. Once added, the camera appears in the control panel for remote monitoring and configuration.
- **Camera List -** Displays all cameras currently added to the control panel. Each entry provides the following details:
  - **Name -** User-defined label for the camera.
  - **Info -** Displays camera details including:
    - **Serial Number -** Unique device identifier.
    - **Firmware -** Current firmware version installed on the device.
    - **Work Mode -** Indicates the active AI function (e.g., Object Counting, LPR).
  - **Last Online -** Shows the last time the camera was connected to the cloud.
- **Camera Status (Colour Indicator) -** Indicates the current connection status of each camera:
  - **Green -** Camera is online and communicating with the cloud.
  - **Yellow -** Camera is offline or temporarily disconnected.
- **Info Icon (button) -** Opens an overlay containing detailed camera information and configuration menus, including:
  - **General Camera Settings**
  - **System Log (Syslog)**
  - **System Resource History**
  - **AI Settings**
  - **Note:** These submenus correspond to the same parameters and configurations outlined in previous sections.
- **Bin Icon (button) -** Removes the selected camera from the control panel.

4.1 General

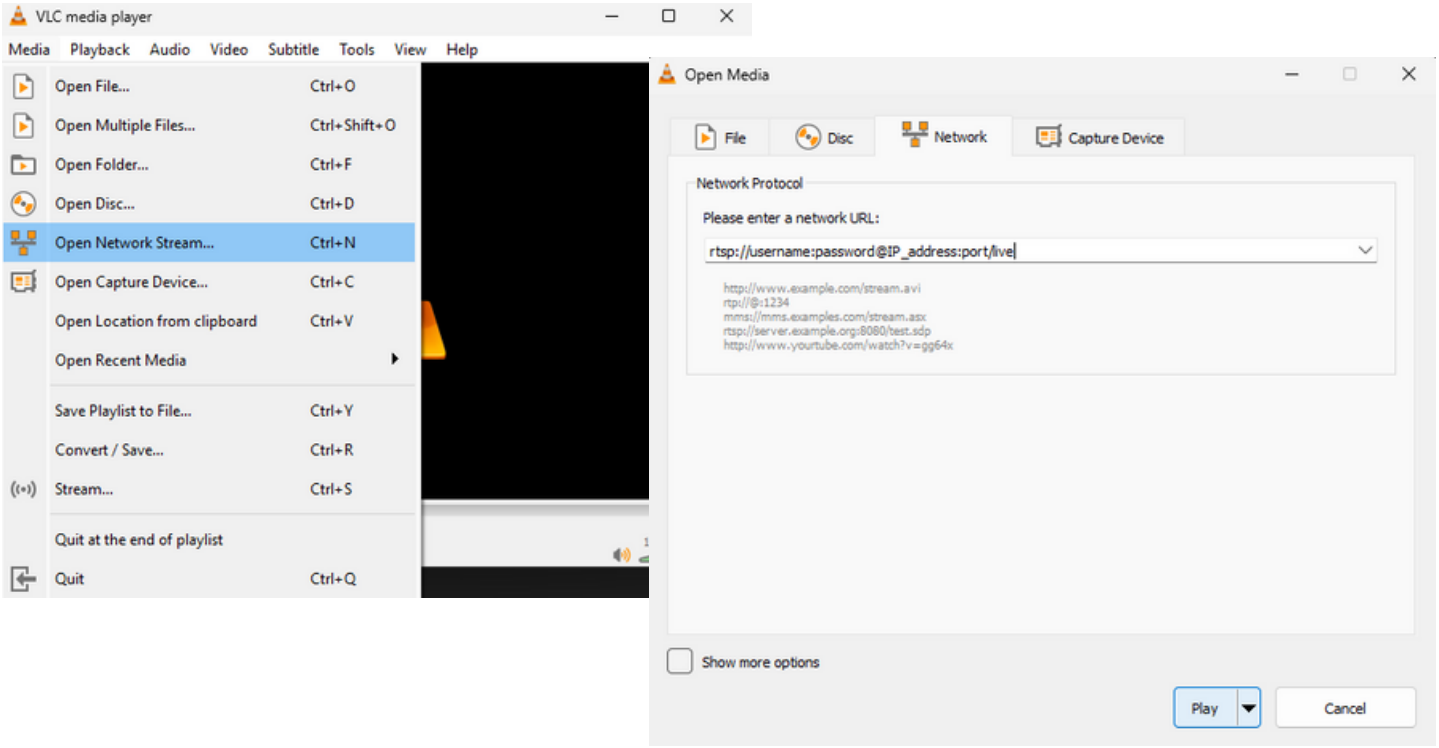


Displays basic device information, system resource usage, and linked configuration details for the selected camera.

- **Name -** Specifies the user-defined name of the camera.
- **Location -** Assigns the camera to an existing site that contains predefined controller, timezone, linked group and assigned users' information.
- **Linked Access Control Controller (Tailgate Detection) -** Displays the associated access control controller used for tailgate or entry detection integration.
- **Serial Number -** Shows the unique identifier assigned to the camera.

5. Connecting to the RTSP stream

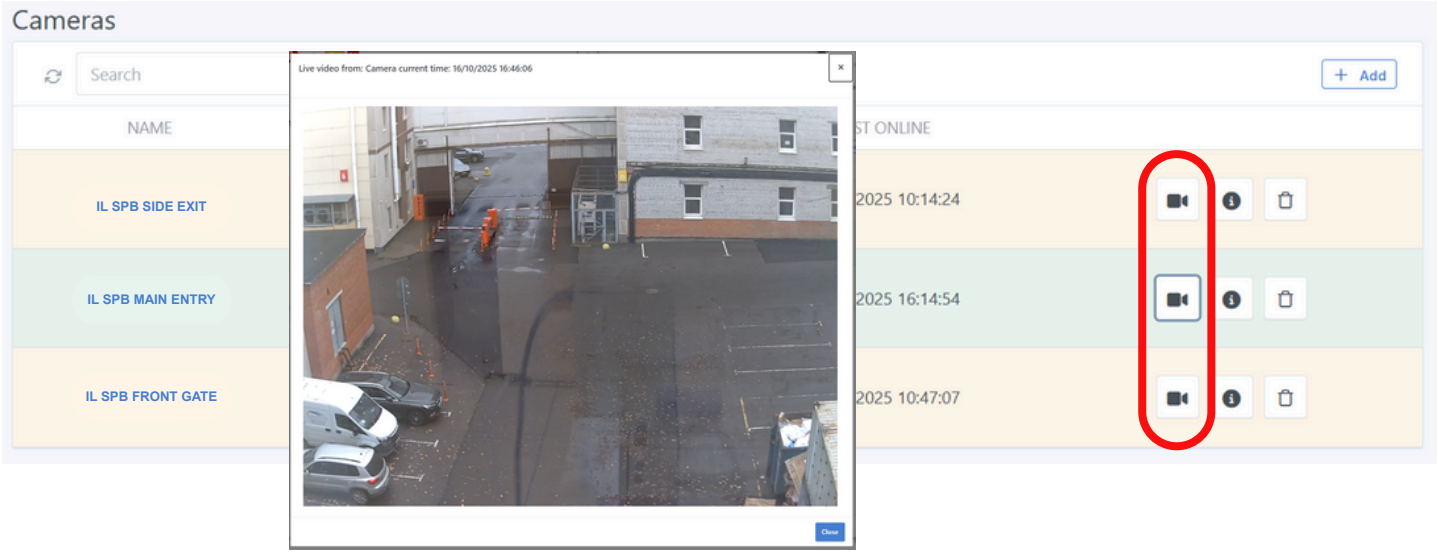
5.1 Using VLC Media Player



Allows live viewing of the camera video stream through an external media client such as VLC Media Player.

- **Access Method -** Open VLC Media Player, navigate to **Media → Open Network Stream.**
- **Stream URL Input -** In the Network tab, enter the RTSP URL of the device in the following format: *rtsp://username:password@IP_address:port/live*
- **Start Stream** - Click Play to initiate the connection and view the live camera feed.
- **Notes**
  - Ensure that the camera's RTSP service is enabled.
  - The IP address and credentials must correspond to the configured network and camera settings.

6. Live stream



The Cloud Management UI enables secure, low-latency live video streaming directly in the browser.

Each camera establishes a peer-to-peer (P2P) data channel with the client, coordinated through IronLogic's signalling servers. This architecture minimises latency and ensures stable, real-time video transmission without requiring intermediate streaming servers. When direct connectivity is limited by network or firewall restrictions, the connection automatically switches to IronLogic's TURN relay. STUN/TURN signalling maintains a seamless and secure session throughout.
This hybrid WebRTC-based approach combines the efficiency of direct connections with the reliability of managed relays, providing consistent, high-quality live streaming across all network environments.

- **Access Method -** In the Cloud Management UI, navigate to **Device Management → Cameras.** Then select the camera button, and a pop-up menu will open with the respective camera's livestream.